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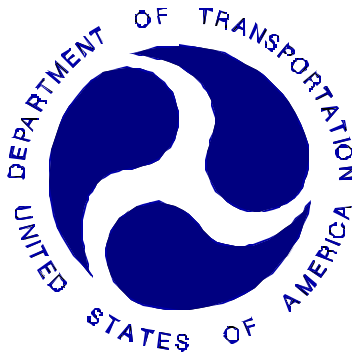
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

GENERAL MOTORS CORP
2004 CHEVROLET MALIBU
4-DOOR SEDAN

NHTSA NUMBER: M40104

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-37

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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December 15, 2003

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking

Office of Crashworthiness Standards

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Washington, DC 20590

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NHTSA, Office of Crashworthiness Standards

Date of Report Acceptance

COTR, New Car Assessment Program (NCAP)
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16. Abstract A frontal load cell barrier test of a 2004 Chevrolet Malibu 4-Door Sedan was performed at General Dynamics crash test facility in Buffalo, New York, on December 15, 2003. The impact velocity was 57.13 kph and the temperature at the barrier face was 20°C. The maximum post-test vehicle crush was 585 mm. The test vehicle was equipped with 3-point restraint systems with shoulder belt pretensioners and load limiters, head restraints, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	447.2	44.5	32.3	-2167.1	-1937.3
Passenger (064)	397.3	46.7	29.3	-1251.9	-1998.7
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 57.13 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 57.13 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 57.13 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with nine accelerometer array head, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap belts to measure dummy pelvic section loading. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No.064) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 191 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2004 Chevrolet Malibu 4-Door Sedan at a velocity of 57.13 kph. The test was performed at General Dynamics on December 15, 2003. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)	Belt Stretch (mm/50 mm)
Driver ATD	447.2	44.5	32.3	-2167.1	-1937.3	§	§
Passenger ATD	397.3	46.7	29.3	-1251.9	-1998.7	§	§

§ - Vehicle was equipped with shoulder belt pretensioners, spool and stretch instrumentation was not installed.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum vehicle static crush was 585 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The face to the top of the center of the airbag, the back of the head to the head restraint, the chest to the airbag and the left and right knees to the knee bolster. The passenger's visible contact points were as follows: The face to the center of the airbag, the back of the head to the head restraint, the chest to the airbag and the left and right knees to the knee bolster.

The 2004 Chevrolet Malibu 4-Door Sedan did not exceed the requirements of FMVSS 208, FMVSS 212, FMVSS 219, and FMVSS 301. Data pertaining to these standards are presented in the data sheets.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No.: M40104 Test Mode: 56.3 kph Frontal Barrier
 Test Date: December 15, 2003 Time: 15:50 Temperature: 20 °C
 Vehicle Make/Model/Body Style: 2004 Chevrolet Malibu 4-Door Sedan
 Vehicle Test Weight: 1635.0 kg
 Vehicle/Barrier Impact Angle: 0 °
 Impact Velocity: 57.13 kph
 Maximum Static Crush: 585 mm
 Vehicle Rebound: 596 mm

<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	<u> 572E </u>	<u> 572E </u>
Restraint System:	Seatbelt with shoulder belt pretensioner and load limiter, Head Restraint, Airbag, Knee Bolster	Seatbelt with shoulder belt pretensioner and load limiter, Head Restraint, Airbag, Knee Bolster

Number of Data Channels: 191
 Number of Cameras: 1 Real Time
 16 High Speed

DOOR OPENING DATA: Closed, latched and operable without tools - Left Front
 Closed, latched and operable without tools - Right Front

Front Seat(s) Data:	<u>DRIVER</u>	<u>PASSENGER</u>
Seat Track Failure: (mm of shift)	<u> 0 </u>	<u> 0 </u>
Seat Back Failure:	<u> None </u>	<u> None </u>

<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Head:	The face to the top of the center of the airbag, the back of the head to the head restraint	The face to the top of the center of the airbag, the back of the head to the head restraint
Abdomen:	<u> None </u>	<u> None </u>
Chest:	<u> Airbag </u>	<u> Airbag </u>
Knees:	<u> Knee Bolster </u>	<u> Knee Bolster </u>

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2004 Chevrolet Malibu 4-Door Sedan

NHTSA No. : M40104 ; VIN: 1G1ZS52F24F129806 ; Color: Green

Engine Data: 4 cylinders; - CID; 2.2 Liters; - cc

Placement: - Longitudinal or In-Line; X Transverse or Lateral

Transmission Data: 4 speeds; - Manual; X Automatic; X Overdrive

Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive

Safety Belt Features – Driver X Pretensioner (Shoulder); X Load Limiter; X Adj. Anchorage

Safety Belt Features - Passenger X Pretensioner (Shoulder); X Load Limiter; X Adj. Anchorage

Major Options: X A/C; X Pwr.Strg.; X Pwr. Brakes

X Pwr. Windows; X Pwr. Door Locks; X Tilt Wheel

Date Received: November 26, 2003 ; Odometer Reading 42 km

Selling Dealer: West Herr Chevrolet of Hamburg

& Address: 5025 Southwestern Boulevard Hamburg, NY 14075

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: General Motors Corp

Date of Manufacture 11/03

GVWR: 1851 kg; GAWR: 955 kg FRONT; 896 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P205/65R15

* Recommended Cold Tire Pressure: 210 kpa FRONT; 210 kpa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P205/65R15 ; Manufacturer: Bridgestone

Tire Pressure with Maximum Capacity Vehicle Load: Front: 300 kPa; Rear: 300 kPa

Treadwear: 360 ; Traction: B ; Temperature: B

VEHICLE CAPACITY DATA:

Type of Front Seats: - Bench; X Bucket; - Split Bench

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 416 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 75.8 kg

*Tire pressure used for test

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front =	<u>422.5</u>	kg	Right Rear =	<u>275.0</u>	kg
Left Front =	<u>433.5</u>	kg	Left Rear =	<u>283.5</u>	kg
TOTAL FRONT =	<u>856.0</u>	kg	TOTAL REAR =	<u>558.5</u>	kg
TOTAL DELIVERED WEIGHT =	<u>1414.5</u>	kg			
% of Total Front of Vehicle Weight =	<u>60.5%</u>		% of Total Rear Weight =	<u>39.5%</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>1414.5</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>75.8</u>	kg
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>1642.3</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND

68.5

KG OF CARGO WEIGHT:

Right Front =	<u>459.5</u>	kg	Right Rear =	<u>349.0</u>	kg
Left Front =	<u>475.5</u>	kg	Left Rear =	<u>351.0</u>	kg
TOTAL FRONT =	<u>935.0</u>	kg	TOTAL REAR =	<u>700.0</u>	kg
TOTAL TEST WEIGHT =	<u>1635.0</u>	kg			
% of Total Front Weight =	<u>57.2%</u>	%	% of Total Rear Weight =	<u>42.8%</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>0</u>	kg			
Vehicle Components Removed for Weight Reduction:	<u>Muffler, Rear Bumper, trunk lid, rear side glass, 37 L of Stoddard solvent</u>				

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>723</u>	LF	<u>721</u>	RR	<u>715</u>	LR	<u>708</u>
FULLY LOADED:	RF	<u>710</u>	LF	<u>705</u>	RR	<u>670</u>	LR	<u>665</u>
AS TESTED:	RF	<u>711</u>	LF	<u>710</u>	RR	<u>675</u>	LR	<u>675</u>
Vehicle's Wheel Base:	<u>2700</u> mm							
Location of Vehicle's C.G.:	<u>1156</u> mm rearward of front wheel center.							

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>62.5</u>	liters		
Usable Capacity Figure Furnished by COTR =	<u>62.5</u>	liters		
Test Volume Range (92 to 94% of Usable Capacity) =	<u>57.5</u>	to	<u>58.75</u>	liters
ACTUAL TEST VOLUME=	<u>20.8</u>	liters (with entire fuel system filled)		
Test Fluid Type:	<u>Stoddard Solution</u>	; Spec. Grav. =	<u>0.764</u>	
Kinematic Viscosity =	<u>0.96</u>	centistokes;	Color = <u>Orange</u>	
Type of Fuel Pump: Electric-	<u>X</u>	; Mechanical-	<u>-</u>	
Does Electric Pump operate with ignition switch "ON" & engine "OFF"	Yes- <u>X</u>	No- <u>-</u>		
<u>Details of Fuel System: Tank – Centered ahead of the rear axle; Lines – inside left frame stiffener; Filler neck - Right side behind the rear axle.</u>				

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: December 15, 2003 Time: 15:50 Temperature: 20 °C
Vehicle NHTSA No.: M40104
Required Impact Velocity Range: 55.5 to 57.1 kph

BARRIER IMPACT VELOCITY: (Speed traps within 5 feet of impact plane.)

Trap No. 1 = 57.13 kph; Trap No. 2 = 57.13 kph
Distance from vehicle to barrier: (1) entering trap = 813 mm
(2) exiting trap = 305 mm

VEHICLE STATIC CRUSH: (mm) (For frontal and rear impacts only.)

Vehicle Length:
Pre-Test Left = 4711 ; C/L = 4779 ; Right = 4711
Post-Test Left = 4309 ; C/L = 4252 ; Right = 4286
Crush Left = 402 ; C/L = 527 ; Right = 425
AVERAGE = 451.33 mm

VEHICLE REBOUND: (From rigid barrier only.)

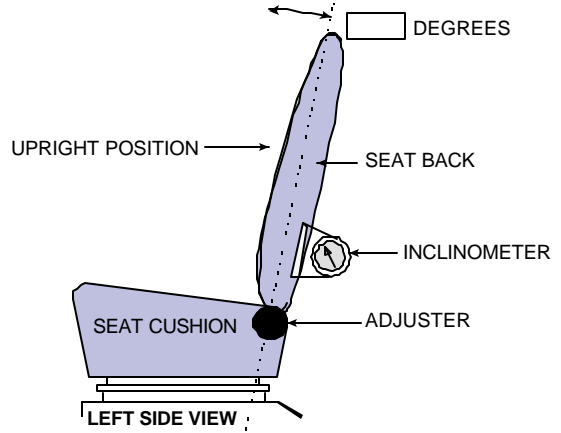
Distance from front of test vehicle to impact point:
Left = 539 ; C/L = 600 ; Right = 650
AVERAGE = 596 mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2004 Vehicle Model: Chevrolet Malibu Body Style : 4-Door Sedan

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 24°

Measurement instructions: An inclinometer should be placed on the outboard seat frame to measure 19°

Seat back angle for passenger's seat: 24°

Measurement instructions: The same as the driver's seat.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Mid-position of 0 to 276 mm (138mm) as determined by measuring the Range of seat travel with the seat full down at rearmost position and full-up at the forwardmost position.

Positioning of the passenger's seat: Mid-position of 0 to 240 mm (120 mm).

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 62.5 liters

B. "Usable Capacity" of the optional equipment fuel tank is - liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 62.5 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 60.4 liters

3.3 Is vehicle equipped with electric fuel pump? Yes- X ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

Not given

DATA SHEET NO. 4 TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS:

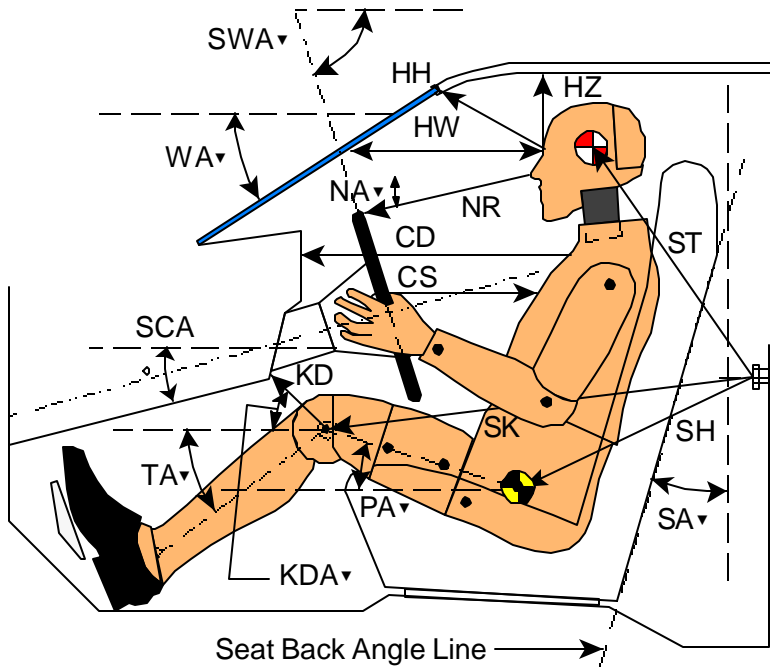
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: Placed at mid-tilt and telescope position.

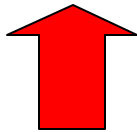
5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Placed in the mid-position of five detents.

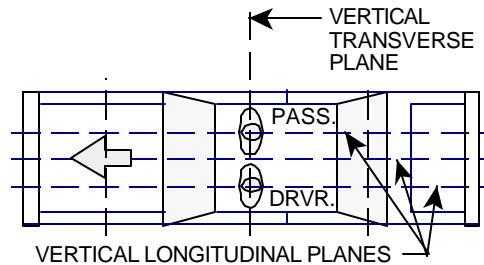
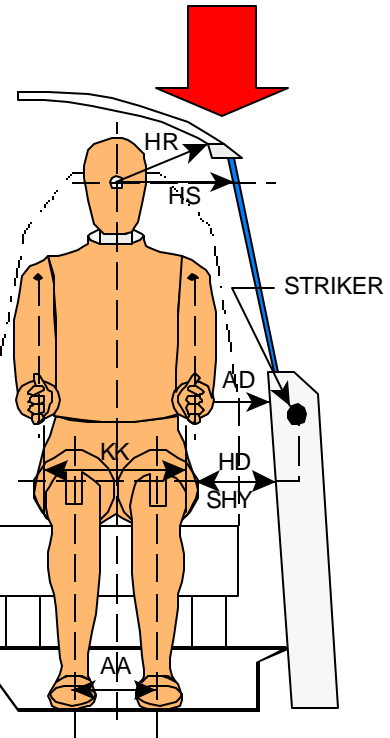
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



- AD - Arm to Door
- HD - H-Point to Door
- HR - Head to Side Header
- HS - Head to Side Window
- KK - Knee to Knee
- AA - Ankle to Ankle
- SHY- Striker to H-Point (Y Direction)



- CD - Chest to Dash
- CS - Steering Wheel to Chest
- HH - Head to Header
- HW - Head to Windshield
- HZ - Head to Roof
- KDA - Knee to Dash Angle
- KDL- Left Knee to Dash
- KDR - Right Knee to Dash
- NA - Nose to Rim Angle
- NR - Nose to Rim
- PA - Pelvic Angle
- RA - Rim to Abdomen
- SA - Seat Back Angle
- SCA - Steering Column Angle
- SH - Striker to H-Point
- SK - Striker to Knee
- ST - Striker to Head
- SWA- Steering Wheel Angle
- TA - Tibial Angle
- WA - Windshield Angle

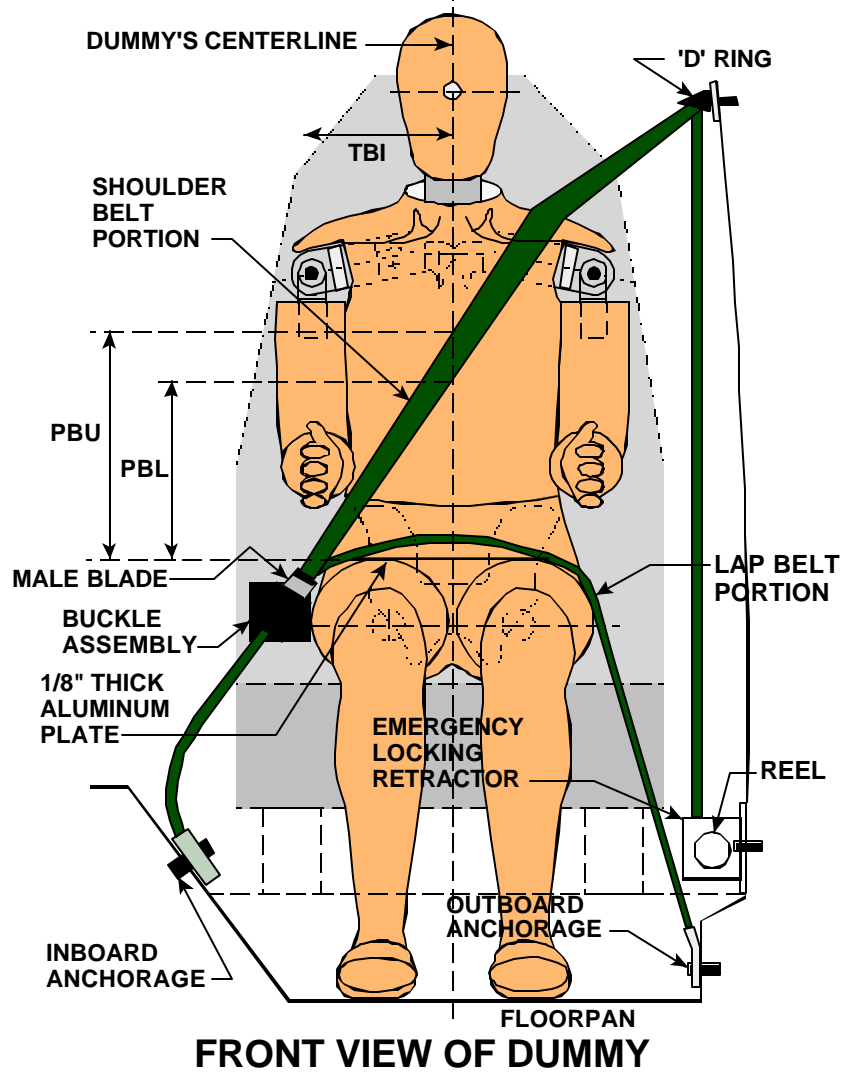


DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ^o	27.0 deg.			N/A		
SWA ^o	66.6 deg.			N/A		
SCA ^o	23.4 deg.			N/A		
SA ^o	24.0 deg.			24.0 deg.		
HZ	195			177		
HH	368			361		
HW	673			613		
HR	223			221		
NR	403	Angle	-9 deg.	N/A		
CD	540			539		
CS	326			N/A		
RA	202			N/A		
KDL	170	Angle (KDA)	35 deg.	189		
KDR	172			186	Angle (KDA)	33 deg.
PA ^o	21.5 deg.			23.8 deg.		
TA ^o	35.0 deg.			40.5 deg.		
KK	332			300		
AA	312			288		
ST	500	Angle	8 deg.	515	Angle	8 deg.
SK	615	Angle	95 deg.	610	Angle	97 deg.
SH	260	Angle	128 deg.	230	Angle	128 deg.
SHY	265			255		
HS	315			320		
HD	143			140		
AD	108			110		

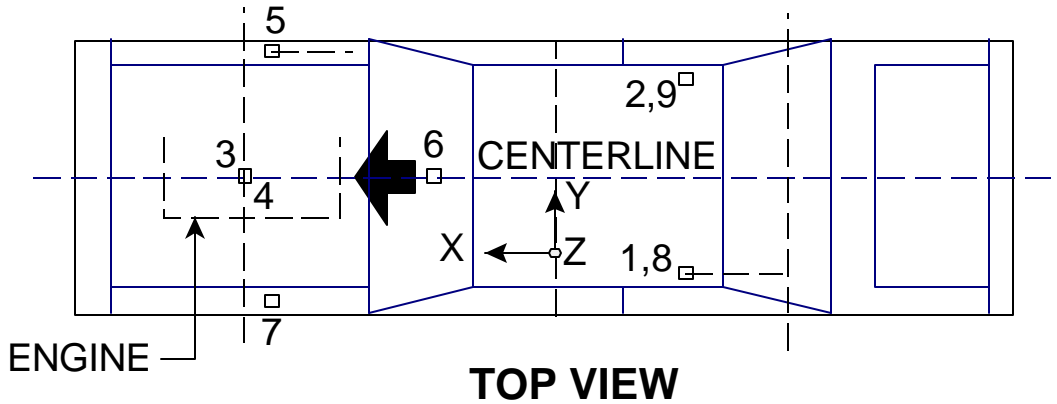
Dimensions in millimeters

SEAT BELT POSITIONING DATA

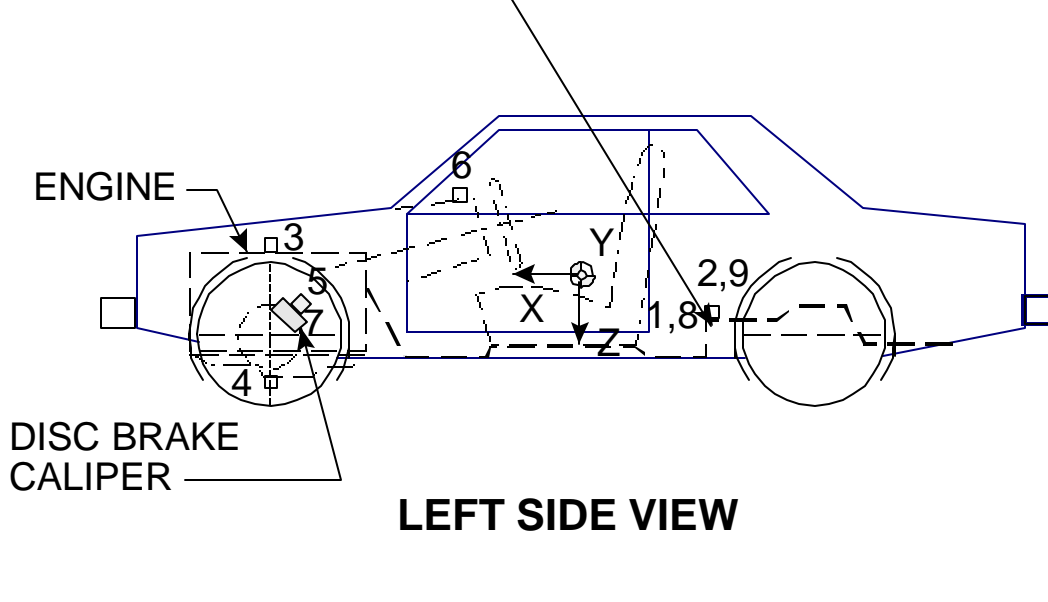


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	330	330
PBL-- Top surface of alum. plate to belt lower edge	250	250
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



Note: Vehicle accelerometer location and data summary shown in DATA SHEET NO. 7

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY (cont.)

LOCATION		PRE-TEST LENGTH (mm)		
		X	Y	Z
1	Left Rear Seat Cross Member X	2022	-499	-199
2	Right Rear Seat Cross Member X	2040	498	-193
3	Top of Engine Block	4076	-63	-767
4	Bottom of Engine	3719	77	-178
5	Disc Brake Caliper @ Right Side	3905	826	-346
6	Instrument Panel	3175	-36	-951
7	Disc Brake Caliper @Left Side	3912	-833	-378
8	Left Rear Seat Cross Member Z	2022	-499	-199
9	Right Rear Seat Cross Member Z	2040	498	-193

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	3.1	32.5	-55.0	37.9
2	Right Rear Seat Cross Member X	4.6	32.0	-61.7	37.7
3	Top of Engine Block	60.2	44.6	-138.0	32.4
4	Bottom of Engine	§	§	§	§
5	Disc Brake Caliper @ Right Side	9.9	40.4	-76.4	32.1
6	Instrument Panel	17.3	33.0	-74.4	38.6
7	Disc Brake Caliper @Left Side	¢	¢	¢	¢
8	Left Rear Seat Cross Member Z	71.7	62.1	-58.0	49.0
9	Right Rear Seat Cross Member Z	57.3	41.2	-71.5	47.1

§ - Wire cut at 37 ms

¢ - Wire Cut at 40 ms

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2004 Chevrolet Malibu 4-Door Sedan

NHTSA Test No.: M40104 Test Date: December 15, 2003

DESCRIPTION	Unit	MAXIMUM VALUE							
		Driver				Passenger			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	2.2	216.7	-8.0	82.6	6.5	97.1	-5.1	61.9
Head 9 Array X Arm Z	g	22.7	81.5	-7.6	125.4	25.2	90.0	-8.8	134.2
Head 9 Array Y Arm X	g	19.4	220.0	-45.7	78.5	20.5	246.3	-51.1	81.0
Head 9 Array Y Arm Z	g	22.4	81.6	-4.0	57.7	22.7	68.1	-2.0	133.8
Head 9 Array Z Arm X	g	31.0	220.5	-45.6	78.3	31.4	246.3	-49.1	78.5
Head 9 Array Z Arm Y	g	4.5	116.9	-12.4	82.2	*	*	*	*
Head X	g	16.6	220.2	-47.7	78.3	19.3	246.3	-50.1	81.0
Head Y	g	2.4	127.5	-10.5	82.4	8.7	89.2	-3.9	74.2
Head Z	g	20.4	81.2	-1.7	57.5	24.1	89.2	-2.6	133.5
Head Resultant	g	52.2	79.4	0.0	-12.1	54.3	89.2	0.0	-9.1
Redundant Head X	g	16.7	220.2	-46.9	77.9	19.4	246.3	-50.8	79.8
Redundant Head Y	g	2.2	124.0	-10.3	82.3	†	†	†	†
Redundant Head Z	g	20.8	80.4	-1.8	57.6	19.4	89.5	-2.4	134.1
Redundant Head Resultant	g	51.7	79.4	0.0	-12.5	†	†	†	†
Upper Neck Fx	N	360.0	77.8	-508.3	109.9	99.0	224.5	-630.1	123.7
Upper Neck Fy	N	67.1	126.5	-103.5	88.3	205.6	96.2	-50.9	17.7
Upper Neck Fz	N	1054.4	69.2	-437.3	251.9	1077.1	67.6	-110.2	256.1
Upper Neck F Resultant	N	1099.7	69.2	0.2	-11.2	1083.6	67.6	0.3	-46.4
Upper Neck Mx	N-m	6.8	132.0	-10.6	98.5	12.8	106.3	-7.2	94.0
Upper Neck My	N-m	44.0	122.2	-27.6	250.1	49.1	124.3	-24.0	90.8
Upper Neck Mz	N-m	10.7	72.8	-8.4	270.0	3.8	41.7	-7.7	71.3
Upper Neck M Resultant	N-m	44.4	121.7	0.0	-9.5	50.1	124.2	0.1	-8.6
Chest X	g	5.8	250.8	-44.1	73.0	**	**	**	**
Chest Y	g	2.6	71.8	-8.2	59.0	4.1	92.2	-5.0	72.5
Chest Z	g	14.4	56.8	-8.5	49.3	9.6	51.1	-5.5	99.8
Chest Resultant	g	46.0	57.7	0.0	-48.9	**	**	**	**

† - Data spike present
 * - Data is Questionable
 ** - Channel Failed

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)

Vehicle Year/Make/Model/Body Style: 2004 Chevrolet Malibu 4-Door Sedan

NHTSA Test No.: M40104 Test Date: December 15, 2003

DESCRIPTION	Unit	MAXIMUM VALUE							
		Driver				Passenger			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	5.8	250.9	-43.8	72.9	3.8	248.3	-47.4	80.4
Redundant Chest Y	g	3.2	74.0	-9.8	58.8	†	†	-4.3	72.3
Redundant Chest Z	g	13.9	56.7	-8.8	49.7	9.6	51.1	-5.7	84.5
Redundant Chest Resultant	g	45.6	57.7	0.1	-50.0	47.5	80.4	0.0	-50.0
Chest Displacement	mm	0.0	-45.8	-32.3	73.6	0.0	13.4	-29.3	93.5
Pelvic X	g	3.5	180.8	-76.8	56.3	3.2	200.1	-96.1	70.7
Pelvic Y	g	8.8	74.9	-14.0	46.9	8.3	64.3	-6.4	80.3
Pelvic Z	g	2.6	254.9	-35.4	58.2	2.3	19.1	-32.1	80.3
Pelvic Resultant	g	83.3	56.3	0.0	121.1	99.5	70.8	0.0	-48.9
Left Femur	N	690.2	50.4	-2167.1	56.3	1063.6	56.8	-1251.9	68.1
Right Femur	N	739.9	73.1	-1937.3	55.9	781.3	50.2	-1998.7	64.7
Left Upper Tibia Mx	N-m	25.7	57.4	-15.6	64.6	13.1	38.2	-48.5	72.2
Left Upper Tibia My	N-m	95.5	69.0	-41.7	57.1	134.0	50.4	-17.7	194.7
Left Lower Tibia Fz	N	∞	∞	∞	∞	58.7	235.9	-3769.3	84.1
Left Lower Tibia Mx	N-m	188.6	62.9	-45.3	99.7	5.5	38.8	-76.0	84.2
Left Lower Tibia My	N-m	26.5	57.7	-23.6	53.1	33.9	83.9	-30.8	42.2
Right Upper Tibia Mx	N-m	27.9	67.5	-63.9	51.4	14.6	138.4	-82.5	64.0
Right Upper Tibia My	N-m	153.3	47.0	-42.1	57.1	87.2	49.9	-17.7	138.7
Right Lower Tibia Fz	N	146.9	31.0	-6974.6	47.1	159.5	121.0	-2999.7	85.9
Right Lower Tibia Mx	N-m	106.5	51.0	-13.1	72.6	41.0	74.3	-23.4	59.9
Right Lower Tibia My	N-m	66.3	57.3	-59.0	43.1	36.7	61.5	-15.8	50.1
Left Foot Aft Ax	g	§	§	§	§	2.0	277.9	-209.4	119.5
Left Foot Aft Az	g	5.1	138.2	-45.4	54.3	24.0	70.7	-57.3	56.0
Left Foot Fore Az	g	§	§	§	§	33.9	71.9	-84.8	49.1
Right Foot Aft Ax	g	§	§	§	§	5.7	71.5	-63.6	47.1
Right Foot Aft Az	g	18.1	68.6	-185.0	46.4	16.0	73.0	-36.2	49.6
Right Foot Fore Az	g	57.2	50.5	-236.9	43.2	32.0	73.1	-53.9	51.5
Lap Belt Load	N	6934.6	57.4	-6.7	8.7	7041.5	58.7	-12.8	164.4

† - Data Spike Present

∞ - Meaningless Data

§ - Channel Failed

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)

Vehicle Year/Make/Model/Body Style: 2004 Chevrolet Malibu 4-Door Sedan

NHTSA Test No.: M40104 Test Date: December 15, 2003

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	447.2	63.4	99.3	43.4 g
Position #2 - Passenger	397.3	65.0	101.0	41.4 g

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	44.5 g	56.8	59.8	432.4
Position #2 - Passenger	46.7 g	78.5	81.5	437.1

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
REDUNDANT DATA

Vehicle Year/Make/Model/Body Style: 2004 Chevrolet Malibu 4-Door Sedan

NHTSA Test No.: M40104 Test Date: December 15, 2003

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	432.5	63.1	99.2	42.8 g
Position #2 - Passenger	412.8	64.5	100.4	42.1 g

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	44.1 g	56.8	59.8	428.7
Position #2 - Passenger	46.7 g	78.5	81.5	441.7

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

Belt length from trim panel exit
to bolt hole anchor point for
continuous webbing systems.

Driver

Passenger

1550

1600

Shoulder belt length as measured
on Part 572 Dummy.

810

820

Lap belt length as measured
on Part 572 Dummy.

590

630

Dimensions in millimeters

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with a 10 mm molding.

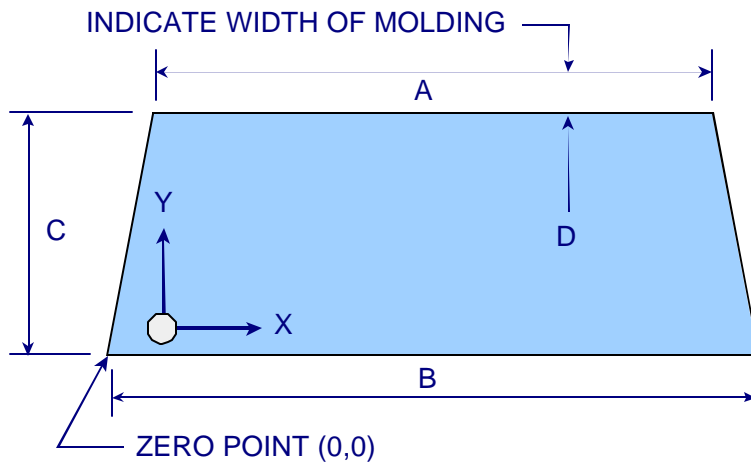
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2166	2166	100.0%
LEFT SIDE	2166	2166	100.0%
TOTAL	4332	4332	100.0%

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1202
B	1550
C	790
D	10

FRONT VIEW OF WINDSHIELD

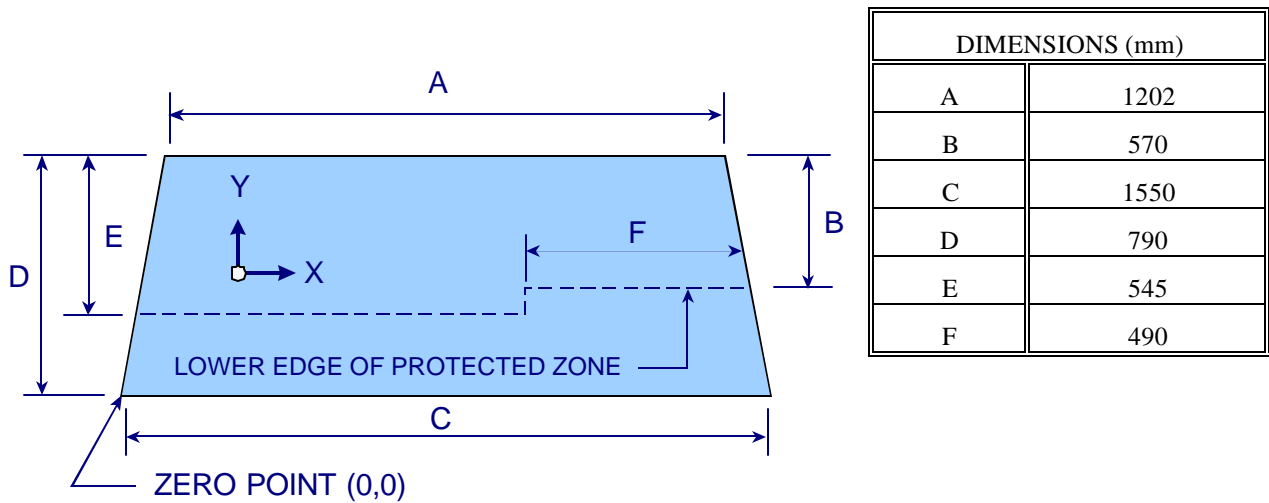
FAILURE DETAILS: None

DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165 mm diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points extend the locus line horizontally to the edges of the windshield, then draw a line on the inner surface of the windshield below and 13 mm distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA:



FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

	COORDINATES	
	X	Y
1.	-	-
2.	-	-
3.	-	-
4.	-	-

DATA SHEET NO. 12 FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

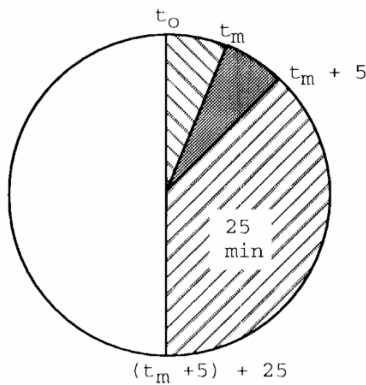
NHTSA TEST No.: M40104 TEST DATE: December 15, 2003
VEHICLE MAKE/MODEL: 2004 Chevrolet Malibu 4-Door Sedan

The test vehicle was filled from 92% to 94% of the manufacturer's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

=====

TEST VEHICLE IMPACT TYPE: X Frontal (56 kph)
- Oblique (48 kph) with _____ deg. barrier face first contacting _____
- (driver/passenger) side
- Rear Moving Barrier (48 kph)
- Lateral Moving Barrier (32 kph)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

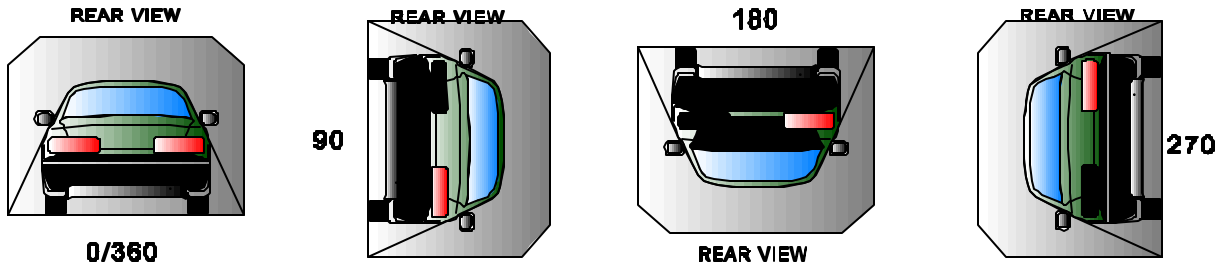
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2004 Chevrolet Malibu 4-Door Sedan

NHTSA No.: M40104



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
	1	minutes	07	seconds	5	minutes	6	minutes	7	seconds	7	minutes
0° - 90°	1	minutes	05	seconds	5	minutes	6	minutes	5	seconds	7	minutes
90° - 180°	1	minutes	09	seconds	5	minutes	6	minutes	9	seconds	7	minutes
180°-270°	1	minutes	07	seconds	5	minutes	6	minutes	7	seconds	7	minutes

II. FMVSS 301 REQUIREMENTS: (Maximum allowable solvent spillage):

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
142 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

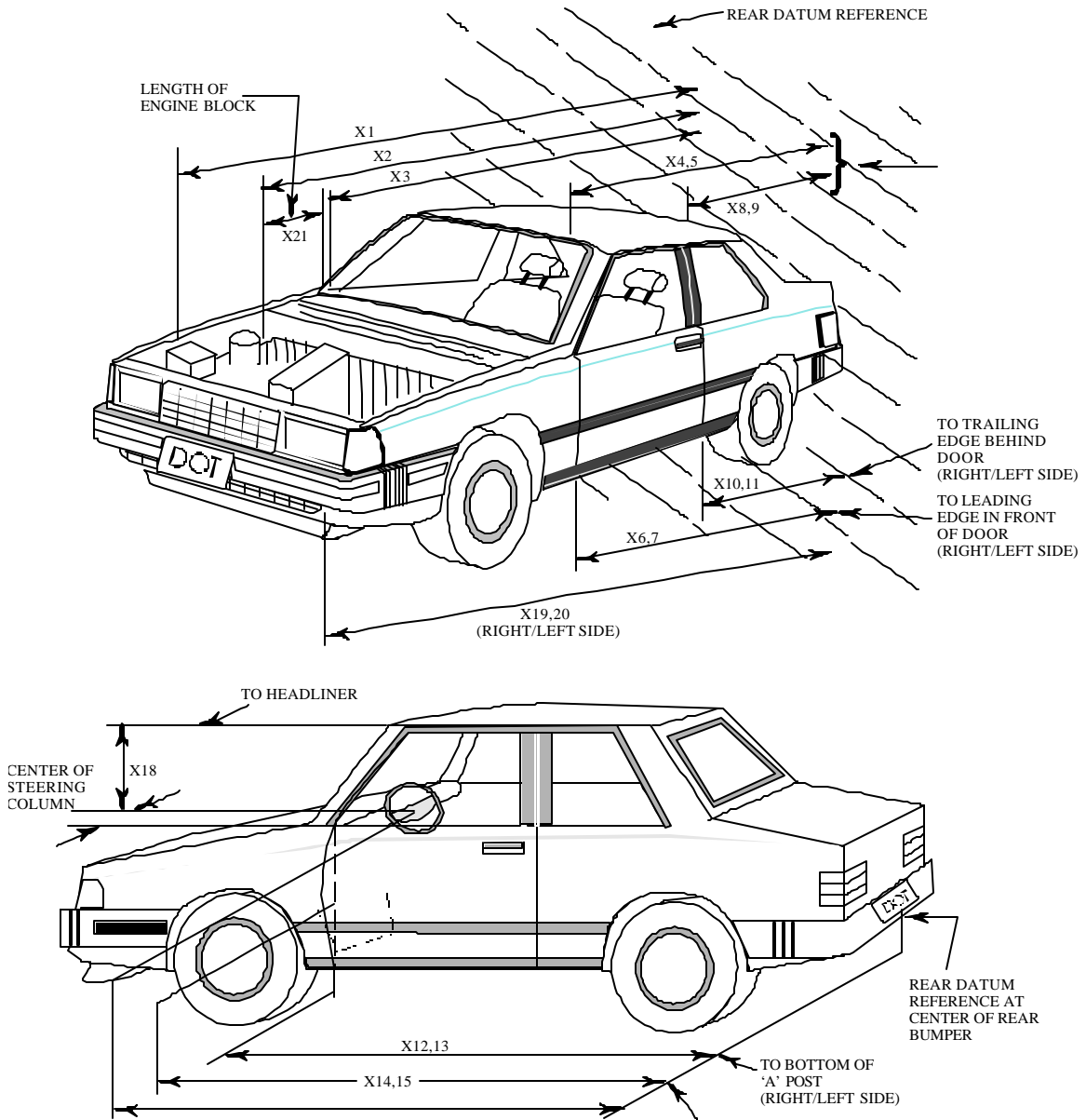
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0° - 90°	None
90° - 180°	None
180°-270°	None
270°-360°	None

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

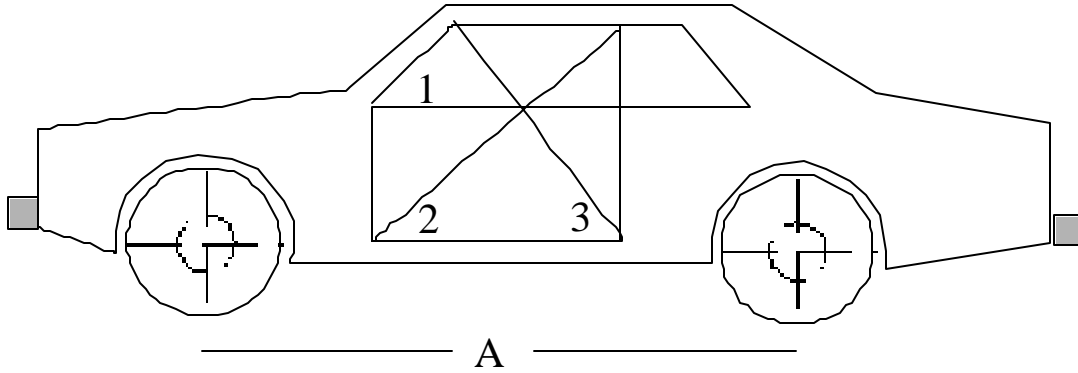


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4779	4252	527
X2	Rear Surface of Vehicle to Front of Engine	4250	3996	254
X3	Rear Surface of Vehicle to Firewall	3664	3584	80
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3294	3297	-3
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3307	3307	0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3300	3302	-2
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3306	3321	-15
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2195	2196	-1
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2210	2210	0
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2224	2228	-4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2239	2249	-10
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3325	3333	-8
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3335	3337	-2
X14	Rear Surface of Vehicle to Firewall, Right Side	3662	3567	95
X15	Rear Surface of Vehicle to Firewall, Left Side	3671	3599	72
X16	Rear Surface of Vehicle to Steering Column	2827	2836	-9
X17	Center of Steering Column to "A" Post	339	322	17
X18	Center of Steering Column to Headliner	423	457	-34
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4711	4286	425
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4711	4309	402
X21	Length of Engine Block	384	384	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3022	3016	6
CD	Rear Surface of Vehicle to Center of Dash Panel	3053	3036	17
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3007	3010	-3

All Dimensions in mm

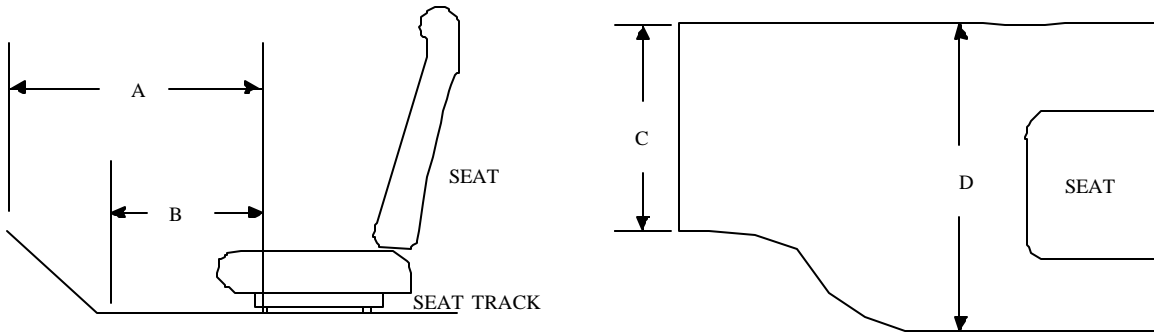
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1012	1438	957	1004	1426	974
AFTER TEST	1008	1439	962	1010	1433	978
DIFFERENCE	4	-1	-5	-6	-7	-4

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2700	2700
AFTER TEST	2622	2656
DIFFERENCE	78	44

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 STATIC FOOTWELL DEFORMATION



DRIVER

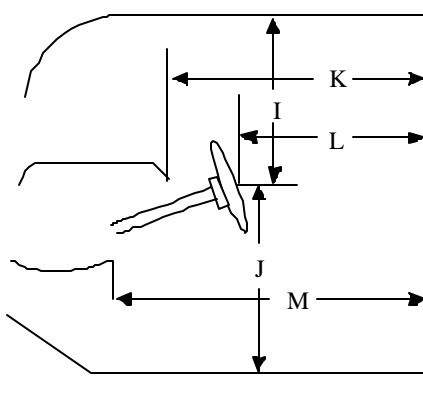
Measurement	Pre-Test	Post-Test	Difference
A	826	745	81
B	643	593	50
C	518	415	103
D	434	385	49

PASSENGER

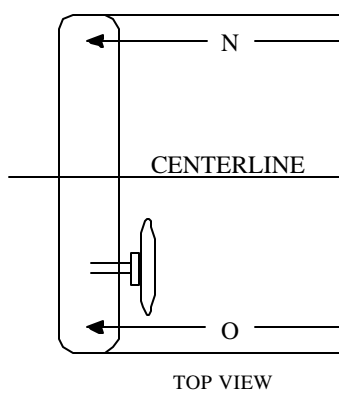
Measurement	Pre-Test	Post-Test	Difference
A	785	726	59
B	561	555	6
C	445	461	-16
D	454	441	13

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 STATIC PASSENGER COMPARTMENT INTRUSION

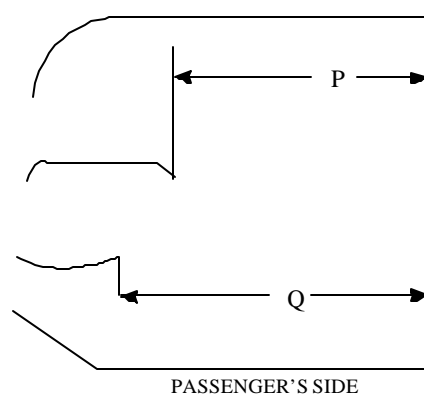


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
 FROM C-PILLAR
 BELT ANCHORAGE

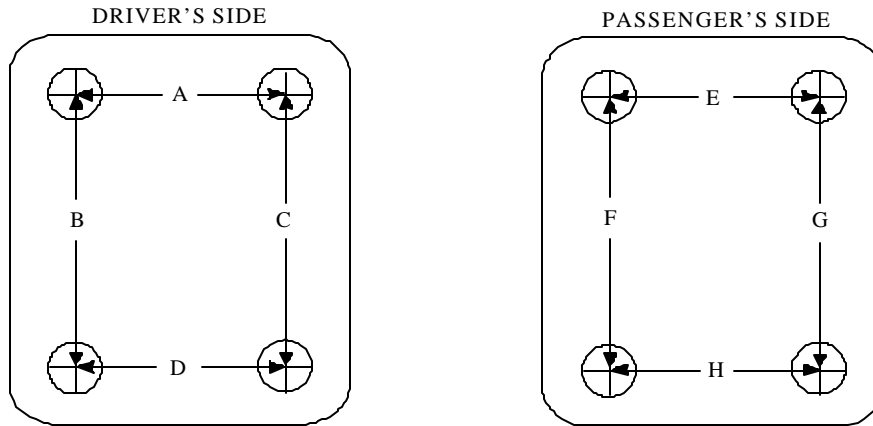


PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	423	457	-34
J	646	619	27
K	1999	1982	17
L	1796	1795	1
M	2008	1997	11
N	1995	1986	9
O	1976	1969	7
P = K (PASS.)	2028	1993	35
Q = M (PASS.)	2078	2065	13

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 FLOORBOARD DEFORMATION

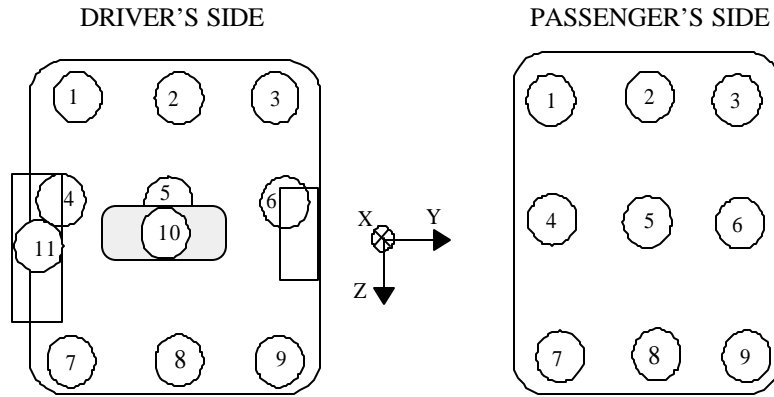


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	518	415	103
B	372	377	-5
C	226	309	-83
D	434	385	49
E	445	461	-15
F	343	342	2
G	363	313	50
H	454	441	12

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
TOE-PAN INTRUSION



Driver Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3481	3460	21	-500	-584	84
2	3522	3451	71	-488	-577	89
3	3541	3438	103	-453	-543	90
4	3419	3395	24	-363	-434	71
5	3478	3433	45	-340	-444	104
6	3518	3424	94	-373	-449	76
7	3309	3288	21	-276	-335	59
8	3339	3298	41	-274	-357	83
9	3389	3366	23	-260	-343	83
10	3336	3239	97	-453	-506	53
11	3384	3360	24	-349	-410	61

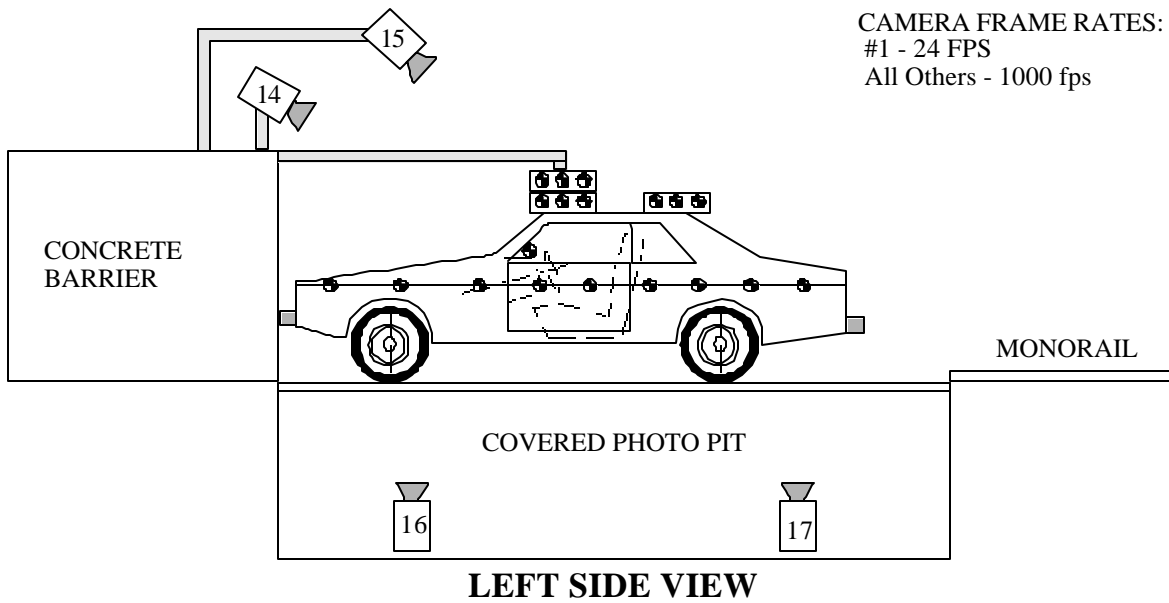
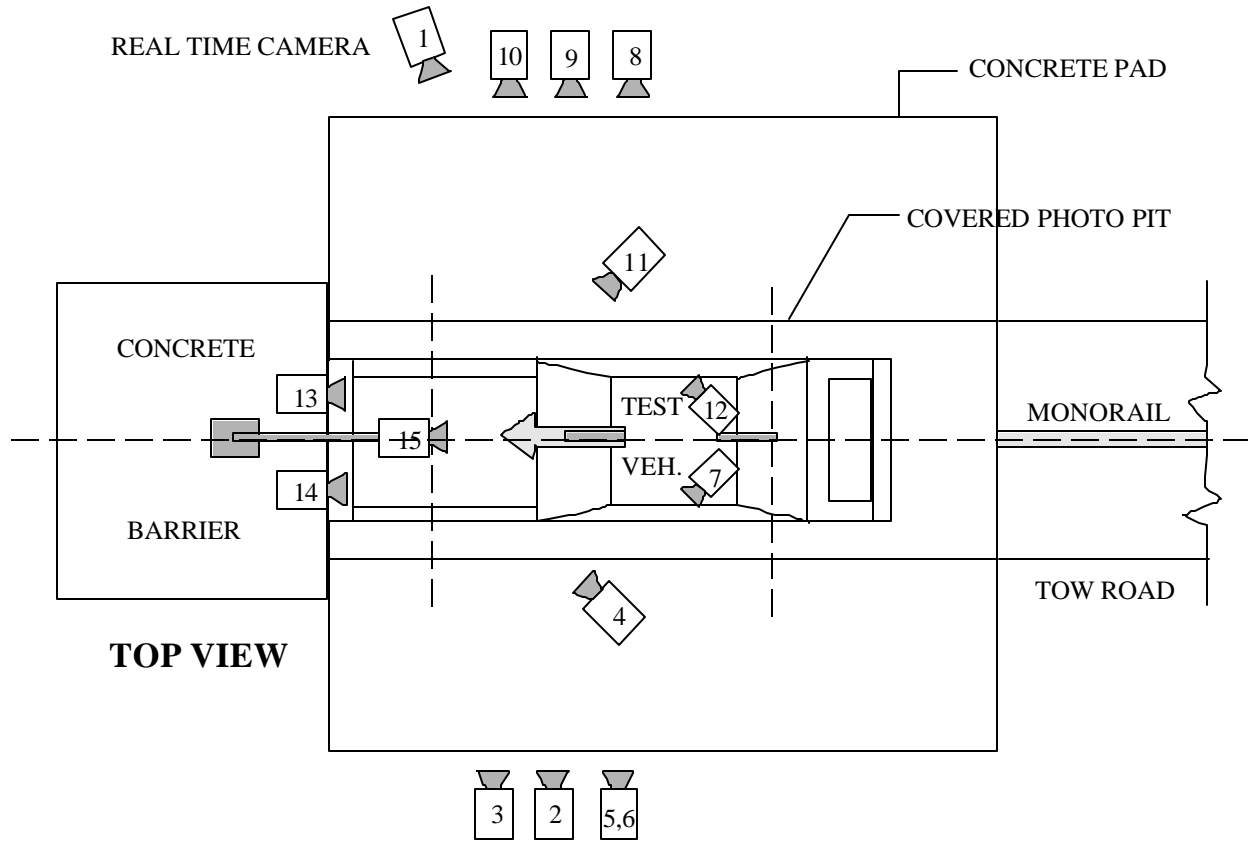
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3458	3414	44	-427	-501	74
2	3474	3413	61	-406	-472	66
3	3427	3370	57	-454	-484	30
4	3350	3332	18	-322	-355	33
5	3342	3344	-2	-315	-370	55
6	3368	3369	-1	-326	-368	42
7	3232	3245	-13	-249	-277	28
8	3250	3242	8	-252	-298	46
9	3247	3251	-4	-257	-303	46

Reference: SAE: X = Rear Bumper (Positive: forward); Z = Ground (Positive: down)

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

NOTE: Camera information shown in DATA SHEET NO. 15.



DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS (cont.)

NHTSA Test No.: M40104 Vehicle: 2004 Chevrolet Malibu 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6720	1750	1090	-4	6336	12.5	1010
3	Left Side View	7893	925	1110	-3	7509	25	1005
4	Driver and Interior View	7745	2915	1995	-10	-	25	1015
5	Steering Column (Bottom)	7576	2090	1117	-4	7192	25	1000
6	Steering Column (Top)	7675	2090	1777	-8	7291	25	1040
7	Left Rear Occupant View	3065	1253	1218	-12	-	13	1000
8	Overall Right Side	6820	3065	1041	-2	7089	12.5	1010
9	Right Side View	6950	1949	1200	-3	7219	25	1000
10	Right Passenger View	8610	1176	1313	-3	8879	35	1000
11	Passenger and Interior View	7620	1950	1976	-12	-	25	1005
12	Right Rear Occupant View	2949	1253	1208	-5	-	13	1000
13	Passenger Front View	620	-92	1987	-40	-	13	1000
14	Driver Front View	620	-92	1987	-36	-	13	1005
15	Windshield View	0	-530	3374	-47	-	13	1000
16	Pit View of Engine	0	615	-3048	90	-	13	1000
17	Pit View of Fuel Tank	0	3103	-3048	90	-	13	1025

*X = film plane to monorail centerline ** = referenced to horizontal plane

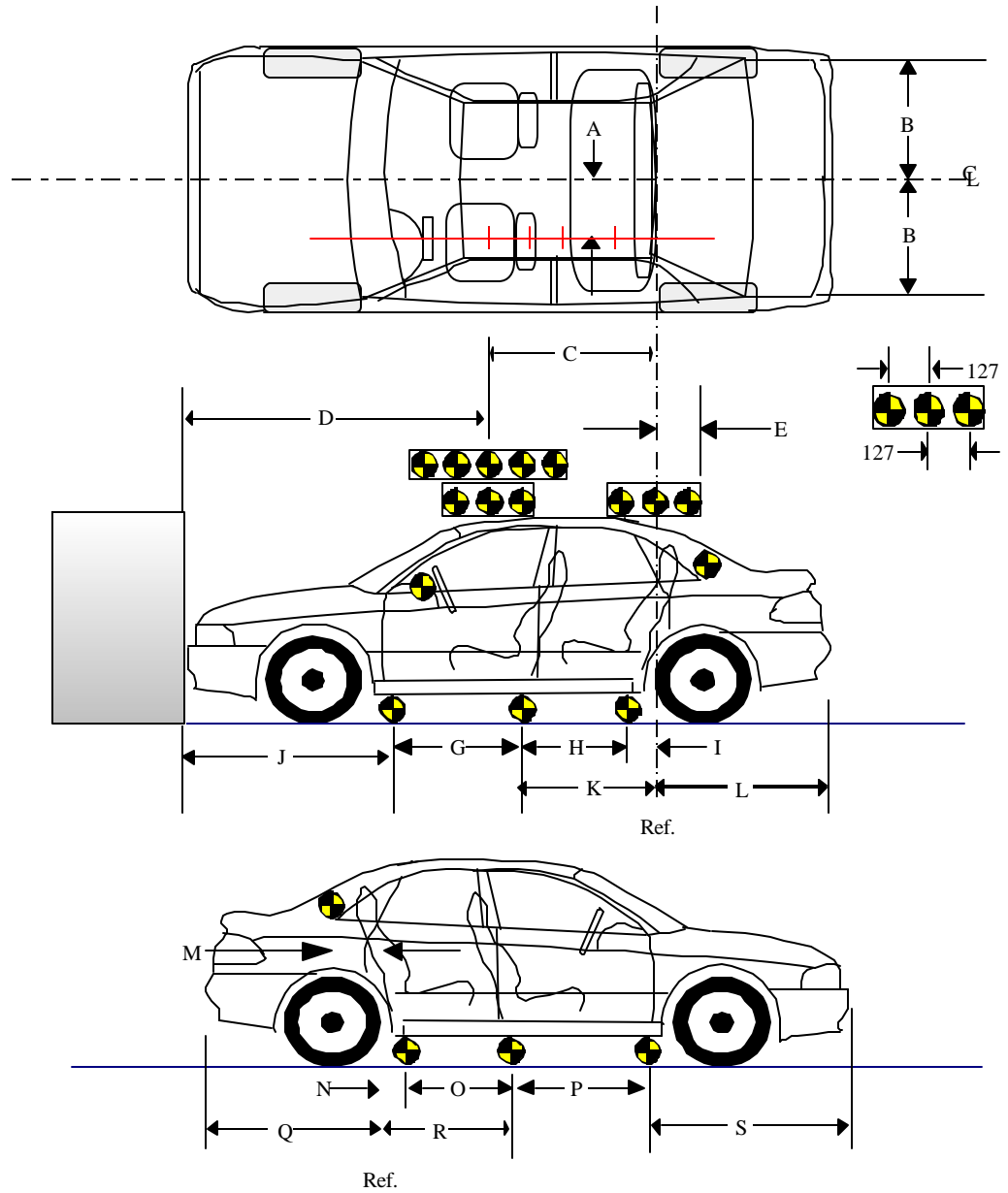
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

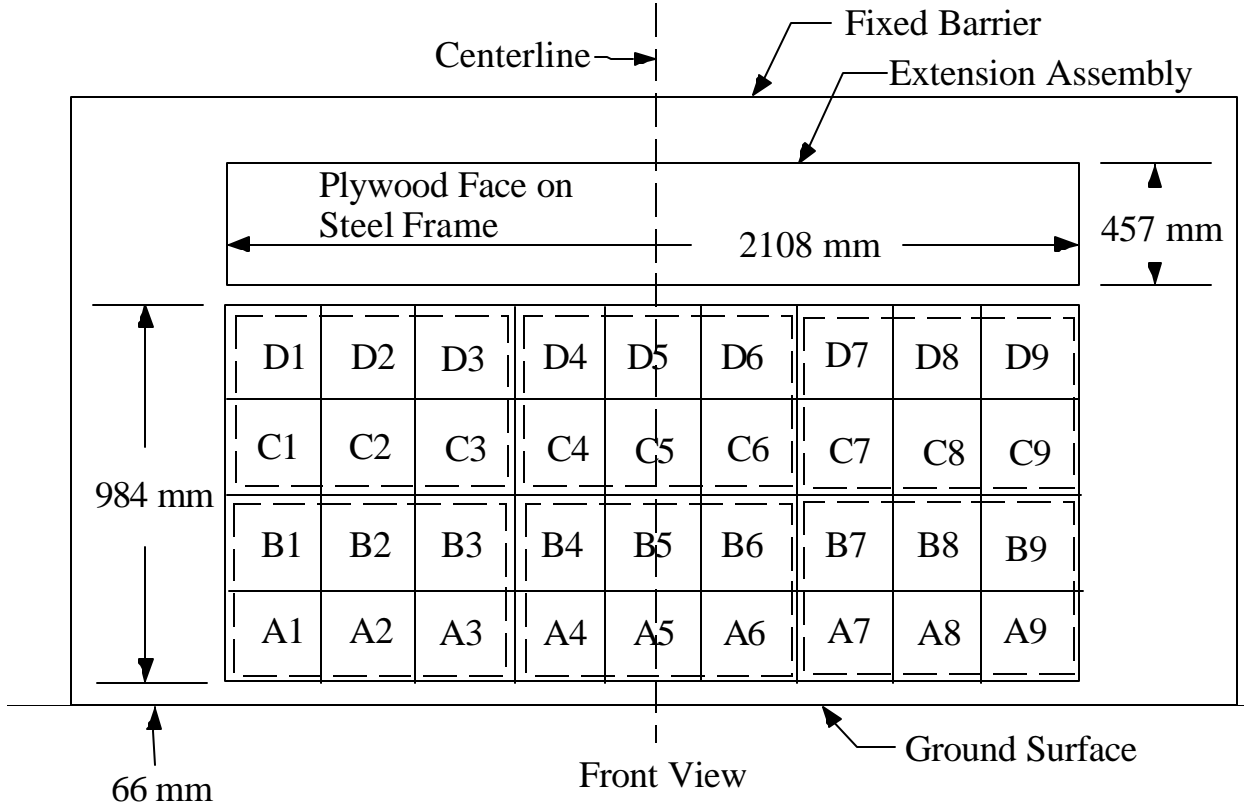
(Dimensions in millimeters)

A	345
B	653
C	915
D	2440
E	394
F	1558
G	918
H	910
I	121
J	1417
K	1031
L	1413
M	397
N	122
O	911
P	914
Q	1400
R	1033
S	1432



DATA SHEET NO. 17 LOAD CELL LOCATIONS ON FIXED BARRIER

- 36 Load Cells
- 4 Rows
- 9 Columns
- 6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

- (1) Data from 36 individual load cells
- (2) Total or Sum of 36 individual load cells
- (3) Data from 6 Groupings shown above (6 cells/group)

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Chevrolet Malibu 4-Door Sedan

NHTSA Test No.: M40104 VIN: 1G1ZS52F24F129806

Model Year: 2004 Build Date: 11/03 Test Date: December 15, 2003

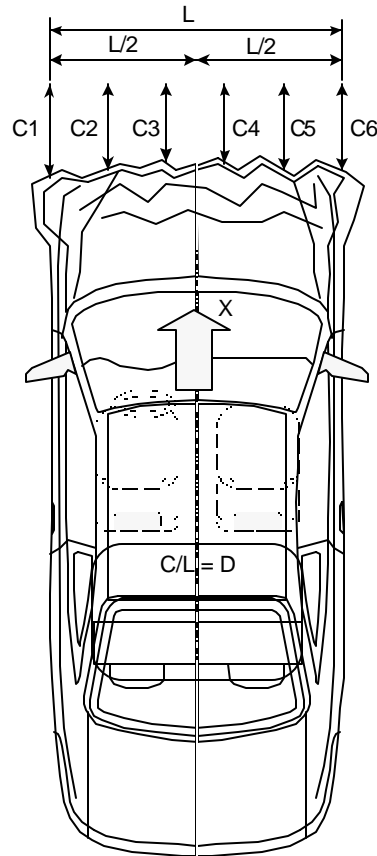
Vehicle Size Category: Mid-Size Test Weight: 1635.0 kg

Vehicle Wheelbase: 2700 mm; Front Overhang: 984 mm; Overall Width: 1775 mm

Collision Deformation Classification (CDC) Code: 12FDEW 3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4591	4256	335
C2 =	4720	4313	407
C3 =	4765	4281	484
C4 =	4769	4282	487
C5 =	4718	4291	427
C6 =	4590	4222	368



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1479 mm

L2= 739.5 mm

L5= 295.8 mm

APPENDIX A
PHOTOGRAPHS

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A-43	Post-Test Driver Contact To Airbag	A-46

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A-50	Pre-Test Passenger Feet View	A-53
A-51	Post-Test Passenger Feet View	A-54
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A-54	Pre-Test Passenger Floor Pan View	A-57
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A-56	Post-Test Passenger Head View	A-59
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Figure A-1 LOAD CELL LOCATIONS



Figure A-2 VEHICLE CERTIFICATION PLACARD



Figure A-3 VEHICLE TIRE PLACARD



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Figure A-4 RIGHT FRONT, AS RECEIVED

FILE CORRUPTED – PHOTOGRAPH IS NOT AVAILABLE

A-8

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Figure A-5 LEFT REAR, AS RECEIVED



Figure A-6 PRE-TEST FRONT VIEW



Figure A-7 POST-TEST FRONT VIEW



Figure A-8 PRE-TEST LEFT SIDE VIEW



Figure A-9 POST-TEST LEFT SIDE VIEW



Figure A-10 PRE-TEST RIGHT SIDE VIEW



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Figure A-11 POST-TEST RIGHT SIDE VIEW



Figure A-12 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW



Figure A-13 POST-TEST RIGHT FRONT THREE-QUARTER VIEW



Figure A-14 PRE-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-15 POST-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-16 LEFT REAR THREE-QUARTER VIEW OF DOORS AFTER IMPACT



Figure A-17 RIGHT REAR THREE-QUARTER VIEW OF DOORS AFTER IMPACT



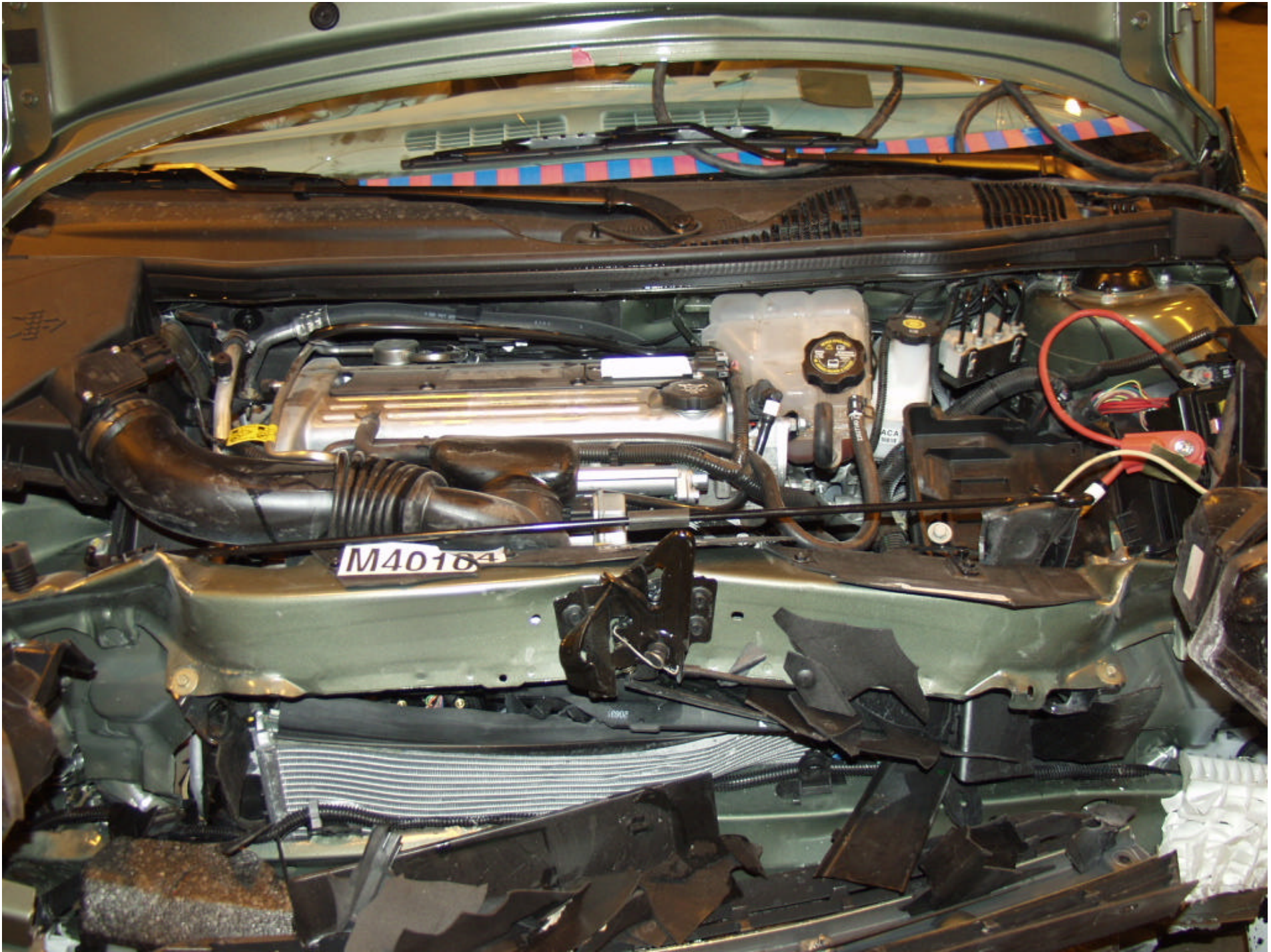
Figure A-18 PRE-TEST WINDSHIELD VIEW



Figure A-19 POST-TEST WINDSHIELD VIEW



Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



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Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW

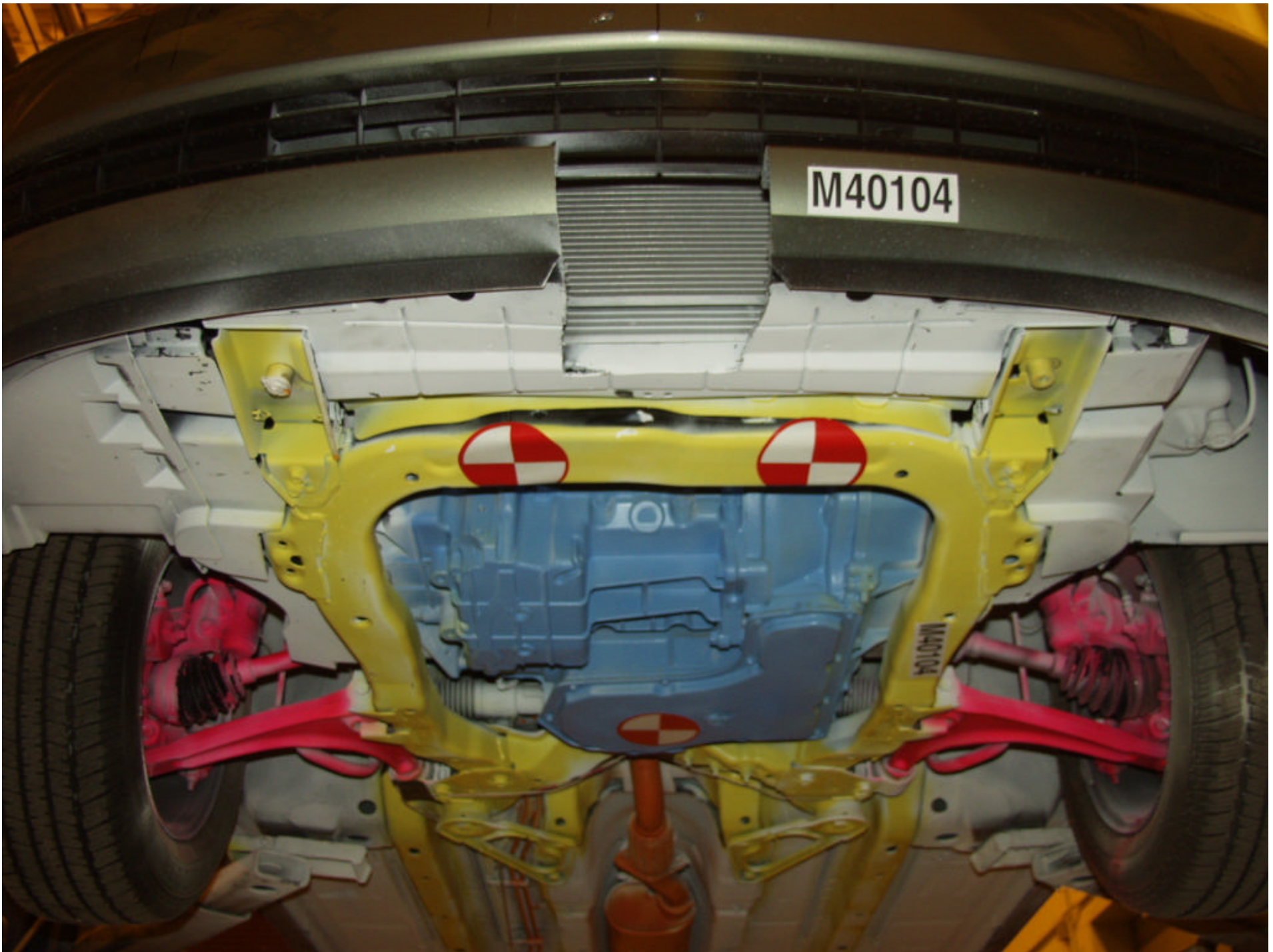


Figure A-24 PRE-TEST FRONT UNDERBODY VIEW

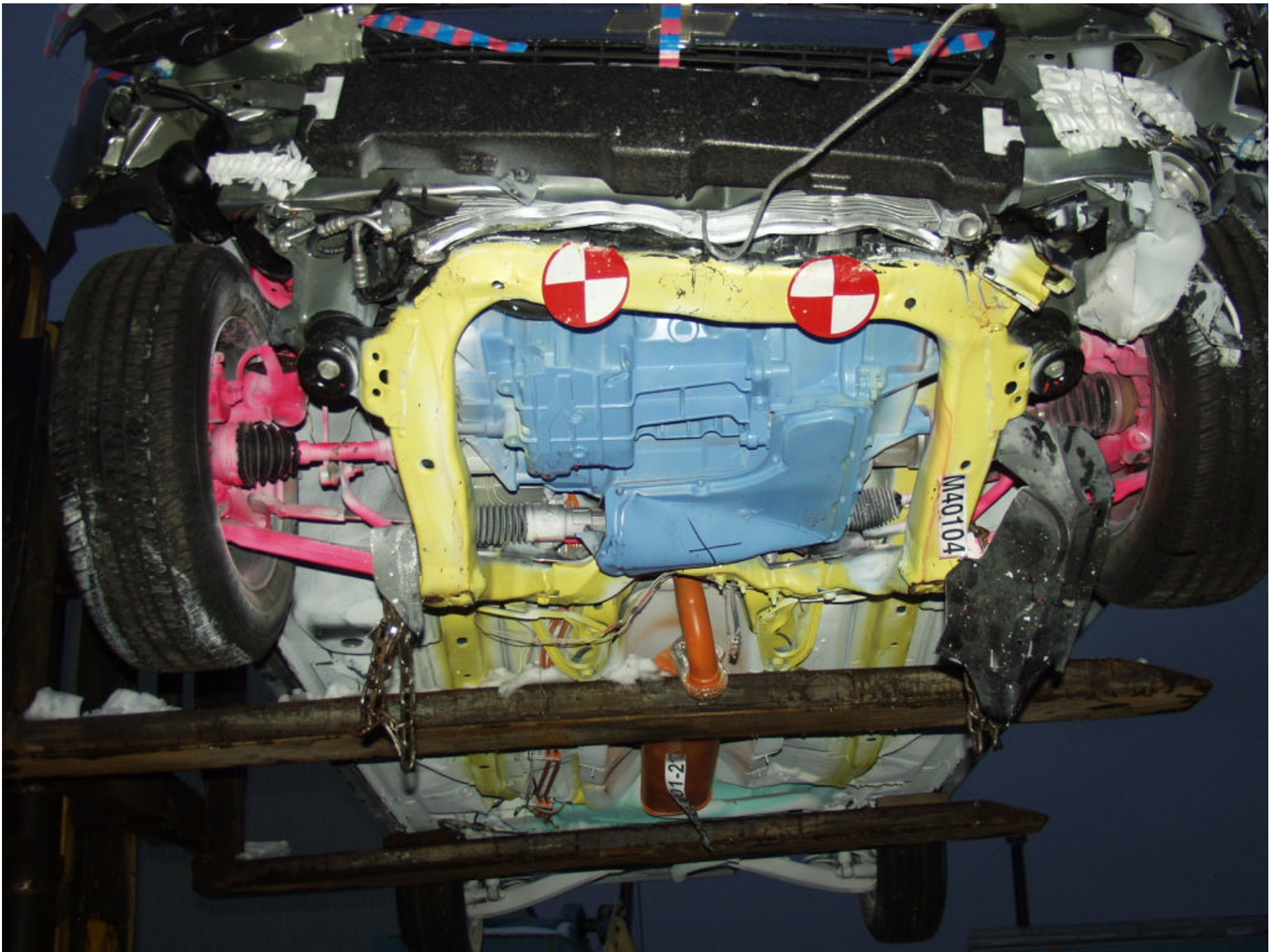


Figure A-25 POST-TEST FRONT UNDERBODY VIEW



Figure A-26 PRE-TEST MID UNDERBODY VIEW

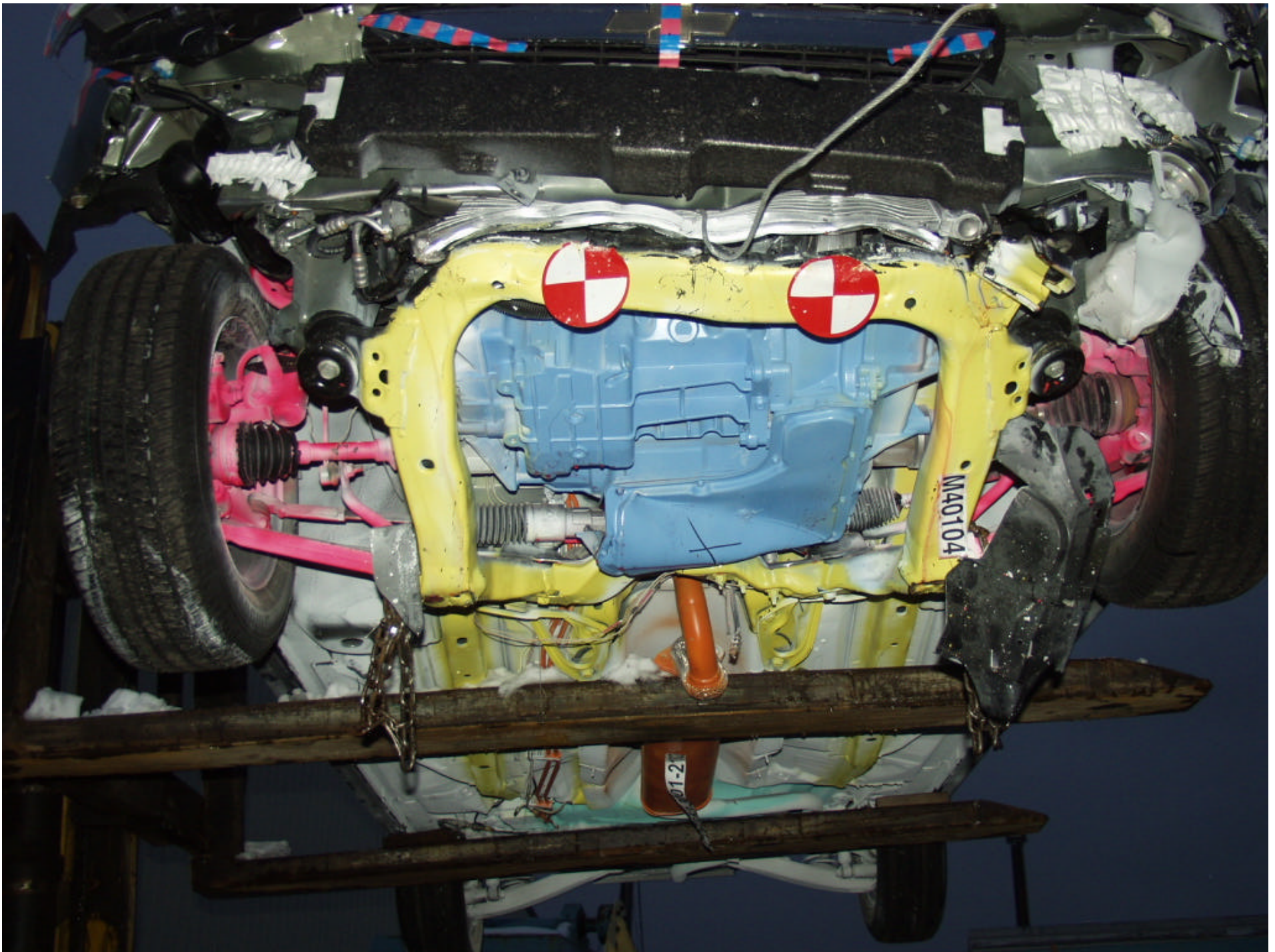


Figure A-27 POST-TEST MID UNDERBODY VIEW



Figure A-28 PRE-TEST REAR UNDERBODY VIEW



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Figure A-29 POST-TEST REAR UNDERBODY VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



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Figure A-31 POST-TEST DRIVER HEAD LOCATION



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Figure A-32 PRE-TEST DRIVER POSITION VIEW



Figure A-33 POST-TEST DRIVER POSITION VIEW



Figure A-34 PRE-TEST DRIVER AND INTERIOR VIEW



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Figure A-35 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-36 PRE-TEST DRIVER FEET VIEW



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Figure A-37 POST-TEST DRIVER FEET VIEW



Figure A-38 PRE-TEST DRIVER KNEE BOLSTER VIEW



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Figure A-39 POST-TEST DRIVER KNEE BOLSTER VIEW



Figure A-40 PRE-TEST DRIVER FLOOR PAN VIEW



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Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



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Figure A-42 POST-TEST DRIVER HEAD VIEW



Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



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Figure A-44 PRE-TEST PASSENGER HEAD LOCATION



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Figure A-45 POST-TEST PASSENGER HEAD LOCATION



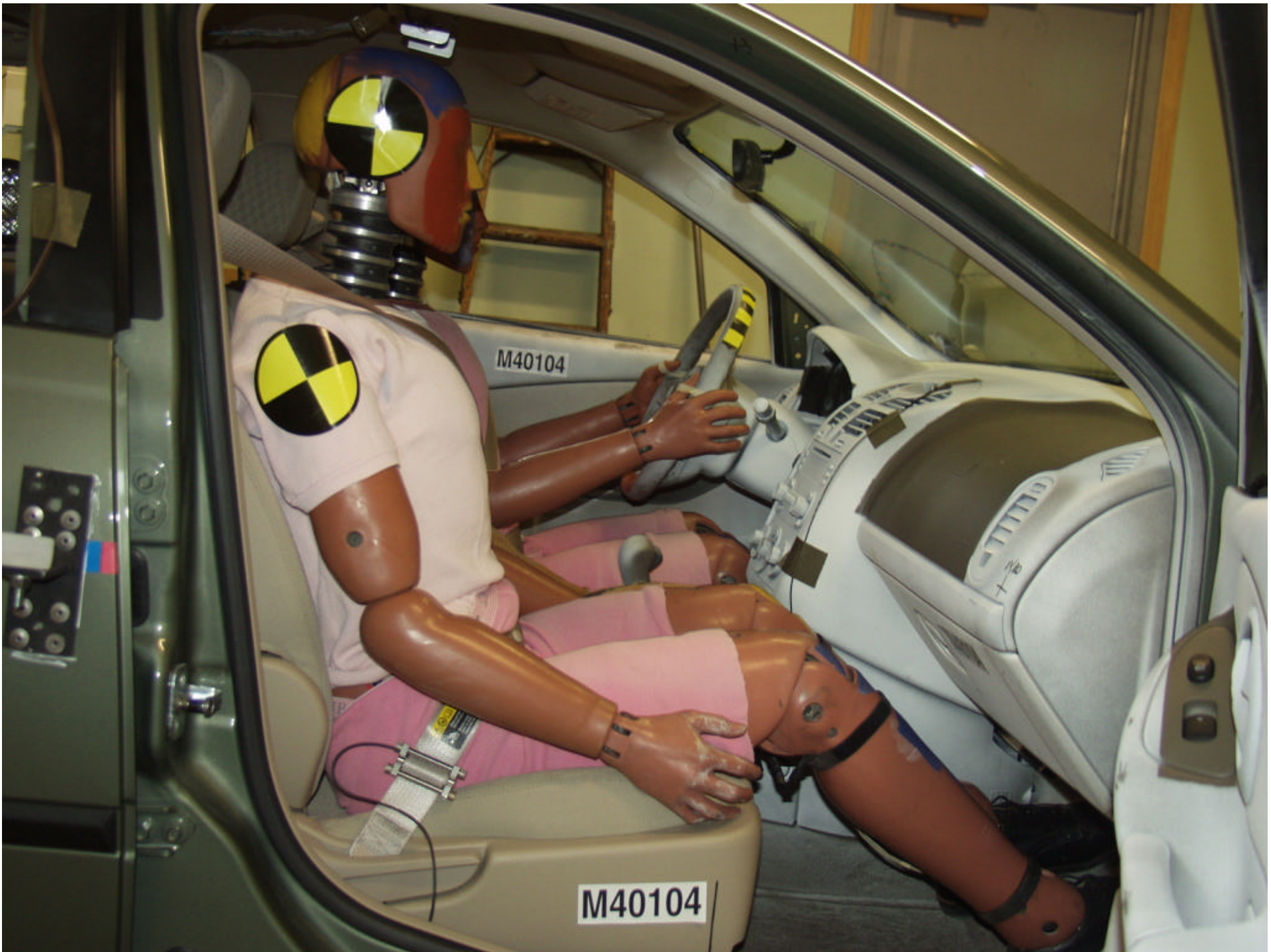
Figure A-46 PRE-TEST PASSENGER POSITION VIEW



A-50

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Figure A-47 POST-TEST PASSENGER POSITION VIEW



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Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



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Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-50 PRE- TEST PASSENGER FEET VIEW



Figure A-51 POST-TEST PASSENGER FEET VIEW



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Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



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Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



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Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW



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Figure A-56 POST-TEST PASSENGER HEAD VIEW



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Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG



Figure A-58 ROLLOVER VIEW



Figure A-59 IMPACT VIEW

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

**Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers**

Transducer	SAE Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head rearward Fy Head left Fz Neck in tension Mx Left ear to left shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest rearward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fz Tibia in tension Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.

DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	600
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle Displacement Integrations	180
Load Cell Barrier Forces	60

Table of Data Plots

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	V1P1 Head 9 Array X Arm Ay [g, CFC_1000]	B-8
2	V1P1 Head 9 Array X Arm Az [g, CFC_1000]	B-9
3	V1P1 Head 9 Array Y Arm Ax [g, CFC_1000]	B-10
4	V1P1 Head 9 Array Y Arm Az [g, CFC_1000]	B-11
5	V1P1 Head 9 Array Z Arm Ax [g, CFC_1000]	B-12
6	V1P1 Head 9 Array Z Arm Ay [g, CFC_1000]	B-13
7	V1P1 Head CG x [g, CFC_1000]	B-14
8	V1P1 Head CG y [g, CFC_1000]	B-15
9	V1P1 Head CG z [g, CFC_1000]	B-16
10	V1P1 Head CG Resultant [g, CFC_1000]	B-17
11	V1P1 Head CG Red x [g, CFC_1000]	B-18
12	V1P1 Head CG Red y [g, CFC_1000]	B-19
13	V1P1 Head CG Red z [g, CFC_1000]	B-20
14	V1P1 Head CG Red Resultant [g, CFC_1000]	B-21
15	V1P1 Upper Neck Fx [N, CFC_1000]	B-22
16	V1P1 Upper Neck Fy [N, CFC_1000]	B-23
17	V1P1 Upper Neck Fz [N, CFC_1000]	B-24
18	V1P1 Upper Neck F Resultant [N, CFC_1000]	B-25
19	V1P1 Upper Neck Mx [N-m, CFC_600]	B-26
20	V1P1 Upper Neck My [N-m, CFC_600]	B-27
21	V1P1 Upper Neck Mz [N-m, CFC_600]	B-28
22	V1P1 Upper Neck M Resultant [N-m, CFC_600]	B-29
23	V1P1 Chest x [g, CFC_180]	B-30
24	V1P1 Chest y [g, CFC_180]	B-31
25	V1P1 Chest z [g, CFC_180]	B-32
26	V1P1 Chest Resultant [g, CFC_180]	B-33
27	V1P1 Chest Red x [g, CFC_180]	B-34
28	V1P1 Chest Red y [g, CFC_180]	B-35
29	V1P1 Chest Red z [g, CFC_180]	B-36
30	V1P1 Chest Red Resultant [g, CFC_180]	B-37
31	V1P1 Chest Compression x [mm, CFC_600]	B-38
32	V1P1 Pelvic x [g, CFC_1000]	B-39
33	V1P1 Pelvic y [g, CFC_1000]	B-40
34	V1P1 Pelvic z [g, CFC_1000]	B-41
35	V1P1 Pelvic Resultant [g, CFC_1000]	B-42
36	V1P1 Left Femur z [N, CFC_600]	B-43
37	V1P1 Right Femur z [N, CFC_600]	B-44
38	V1P1 Left Upper Tibia Mx [N-m, CFC_600]	B-45
39	V1P1 Left Upper Tibia My [N-m, CFC_600]	B-46
40	V1P1 Left Lower Tibia Fz [N, CFC_600]	B-47
41	V1P1 Left Lower Tibia Mx [N-m, CFC_600]	B-48
42	V1P1 Left Lower Tibia My [N-m, CFC_600]	B-49
43	V1P1 Right Upper Tibia Mx [N-m, CFC_600]	B-50
44	V1P1 Right Upper Tibia My [N-m, CFC_600]	B-51
45	V1P1 Right Lower Tibia Fz [N, CFC_600]	B-52
46	V1P1 Right Lower Tibia Mx [N-m, CFC_600]	B-53

Table of Data Plots (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
47	V1P1 Right Lower Tibia My [N-m, CFC_600]	B-54
48	V1P1 Left Foot Aft x [g, CFC_600]	B-55
49	V1P1 Left Foot Aft z [g, CFC_600]	B-56
50	V1P1 Left Foot Fore z [g, CFC_600]	B-57
51	V1P1 Right Foot Aft x [g, CFC_600]	B-58
52	V1P1 Right Foot Aft z [g, CFC_600]	B-59
53	V1P1 Right Foot Fore z [g, CFC_600]	B-60
54	V1P1 Lap Belt [N, CFC_60]	B-61
55	V1P2 Head 9 Array X Arm Ay [g, CFC_1000]	B-62
56	V1P2 Head 9 Array X Arm Az [g, CFC_1000]	B-63
57	V1P2 Head 9 Array Y Arm Ax [g, CFC_1000]	B-64
58	V1P2 Head 9 Array Y Arm Az [g, CFC_1000]	B-65
59	V1P2 Head 9 Array Z Arm Ax [g, CFC_1000]	B-66
60	V1P2 Head 9 Array Z Arm Ay [g, CFC_1000]	B-67
61	V1P2 Head CG x [g, CFC_1000]	B-68
62	V1P2 Head CG y [g, CFC_1000]	B-69
63	V1P2 Head CG z [g, CFC_1000]	B-70
64	V1P2 Head CG Resultant [g, CFC_1000]	B-71
65	V1P2 Head CG Red x [g, CFC_1000]	B-72
66	V1P2 Head CG Red y [g, CFC_1000]	B-73
67	V1P2 Head CG Red z [g, CFC_1000]	B-74
68	V1P2 Head CG Red Resultant [g, CFC_1000]	B-75
69	V1P2 Upper Neck Fx [N, CFC_1000]	B-76
70	V1P2 Upper Neck Fy [N, CFC_1000]	B-77
71	V1P2 Upper Neck Fz [N, CFC_1000]	B-78
72	V1P2 Upper Neck F Resultant [N, CFC_1000]	B-79
73	V1P2 Upper Neck Mx [N-m, CFC_600]	B-80
74	V1P2 Upper Neck My [N-m, CFC_600]	B-81
75	V1P2 Upper Neck Mz [N-m, CFC_600]	B-82
76	V1P2 Upper Neck M Resultant [N-m, CFC_600]	B-83
77	V1P2 Chest x [g, CFC_180]	B-84
78	V1P2 Chest y [g, CFC_180]	B-85
79	V1P2 Chest z [g, CFC_180]	B-86
80	V1P2 Chest Resultant [g, CFC_180]	B-87
81	V1P2 Chest Red x [g, CFC_180]	B-88
82	V1P2 Chest Red y [g, CFC_180]	B-89
83	V1P2 Chest Red z [g, CFC_180]	B-90
84	V1P2 Chest Red Resultant [g, CFC_180]	B-91
85	V1P2 Chest Compression x [mm, CFC_600]	B-92
86	V1P2 Pelvic x [g, CFC_1000]	B-93
87	V1P2 Pelvic y [g, CFC_1000]	B-94
88	V1P2 Pelvic z [g, CFC_1000]	B-95
89	V1P2 Pelvic Resultant [g, CFC_1000]	B-96
90	V1P2 Left Femur z [N, CFC_600]	B-97
91	V1P2 Right Femur z [N, CFC_600]	B-98
92	V1P2 Left Upper Tibia Mx [N-m, CFC_600]	B-99

Table of Data Plots (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
93	V1P2 Left Upper Tibia My [N-m, CFC_600]	B-100
94	V1P2 Left Lower Tibia Fz [N, CFC_600]	B-101
95	V1P2 Left Lower Tibia Mx [N-m, CFC_600]	B-102
96	V1P2 Left Lower Tibia My [N-m, CFC_600]	B-103
97	V1P2 Right Upper Tibia Mx [N-m, CFC_600]	B-104
98	V1P2 Right Upper Tibia My [N-m, CFC_600]	B-105
99	V1P2 Right Lower Tibia Fz [N, CFC_600]	B-106
100	V1P2 Right Lower Tibia Mx [N-m, CFC_600]	B-107
101	V1P2 Right Lower Tibia My [N-m, CFC_600]	B-108
102	V1P2 Left Foot Aft x [g, CFC_600]	B-109
103	V1P2 Left Foot Aft z [g, CFC_600]	B-110
104	V1P2 Left Foot Fore z [g, CFC_600]	B-111
105	V1P2 Right Foot Aft x [g, CFC_600]	B-112
106	V1P2 Right Foot Aft z [g, CFC_600]	B-113
107	V1P2 Right Foot Fore z [g, CFC_600]	B-114
108	V1P2 Lap Belt [N, CFC_60]	B-115
109	V1 Left Rear #1x [g, CFC_60]	B-116
110	V1 Left Rear #1x Velocity [kph, CFC_180]	B-117
111	V1 Left Rear #1x Displacement [mm, CFC_180]	B-118
112	V1 Right Rear #2x [g, CFC_60]	B-119
113	V1 Right Rear #2x Velocity [kph, CFC_180]	B-120
114	V1 Right Rear #2x Displacement [mm, CFC_180]	B-121
115	V1 Engine Top #3x [g, CFC_60]	B-122
116	V1 Engine Top #3x Velocity [kph, CFC_180]	B-123
117	V1 Engine Top #3x Displacement [mm, CFC_180]	B-124
118	V1 Engine Bottom #4x [g, CFC_60]	B-125
119	V1 Engine Bottom #4x Velocity [kph, CFC_180]	B-126
120	V1 Engine Bottom #4x Displacement [mm, CFC_180]	B-127
121	V1 Right Caliper #5x [g, CFC_60]	B-128
122	V1 Right Caliper #5x Velocity [kph, CFC_180]	B-129
123	V1 Right Caliper #5x Displacement [mm, CFC_180]	B-130
124	V1 Instrument Panel #6x [g, CFC_60]	B-131
125	V1 Instrument Panel #6x Velocity [kph, CFC_180]	B-132
126	V1 Instrument Panel #6x Displacement [mm, CFC_180]	B-133
127	V1 Left Caliper #7x [g, CFC_60]	B-134
128	V1 Left Caliper #7x Velocity [kph, CFC_180]	B-135
129	V1 Left Caliper #7x Displacement [mm, CFC_180]	B-136
130	V1 Left Rear #8z [g, CFC_60]	B-137
131	V1 Left Rear #8z Velocity [kph, CFC_180]	B-138
132	V1 Left Rear #8z Displacement [mm, CFC_180]	B-139
133	V1 Right Rear #9z [g, CFC_60]	B-140
134	V1 Right Rear #9z Velocity [kph, CFC_180]	B-141
135	V1 Right Rear #9z Displacement [mm, CFC_180]	B-142
136	Barrier Load Cell A1 Fx [N, CFC_60]	B-143
137	Barrier Load Cell A2 Fx [N, CFC_60]	B-144
138	Barrier Load Cell A3 Fx [N, CFC_60]	B-145

Table of Data Plots (Continued)

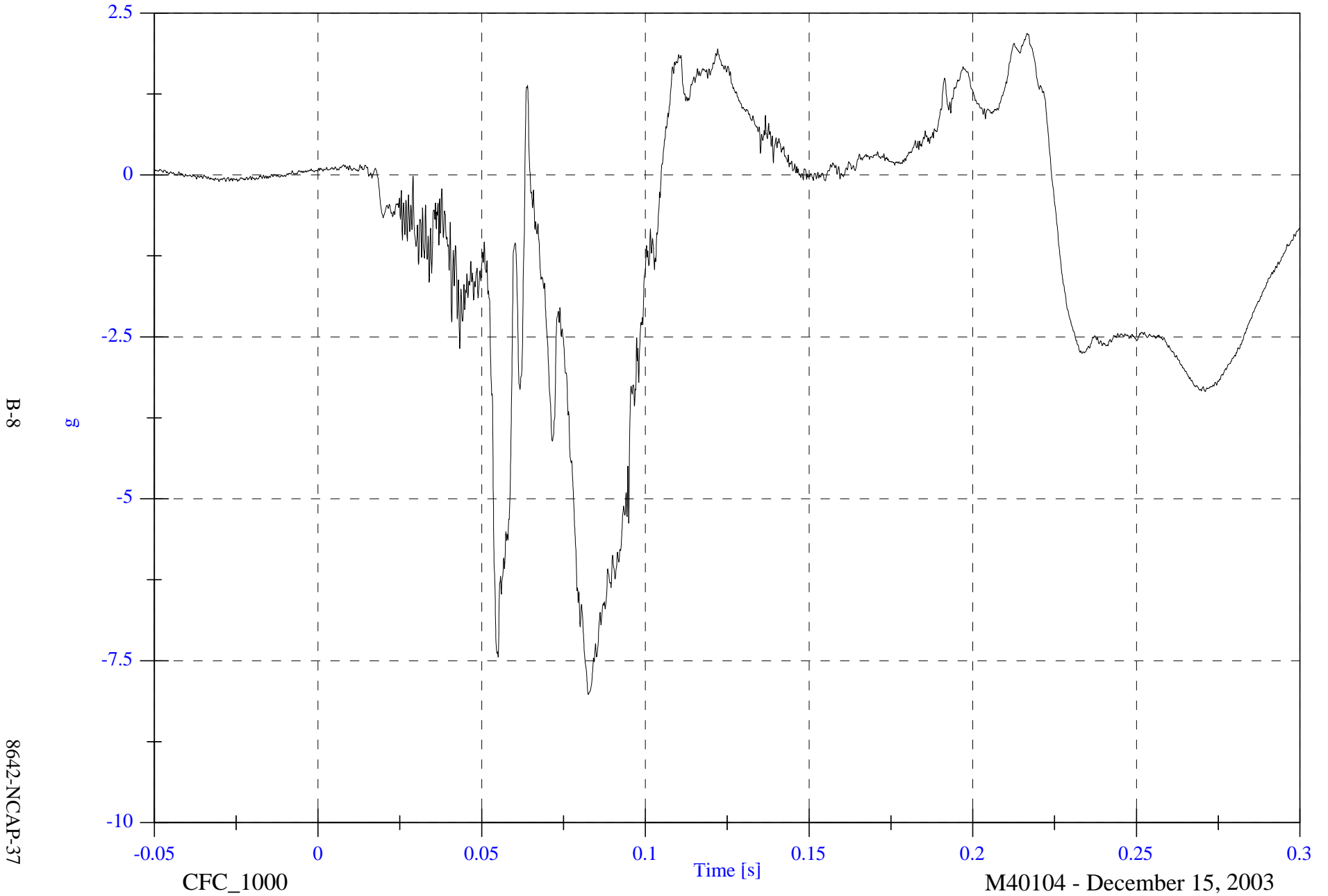
PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
139	Barrier Load Cell A4 Fx [N, CFC_60]	B-146
140	Barrier Load Cell A5 Fx [N, CFC_60]	B-147
141	Barrier Load Cell A6 Fx [N, CFC_60]	B-148
142	Barrier Load Cell A7 Fx [N, CFC_60]	B-149
143	Barrier Load Cell A8 Fx [N, CFC_60]	B-150
144	Barrier Load Cell A9 Fx [N, CFC_60]	B-151
145	Barrier Load Cell B1 Fx [N, CFC_60]	B-152
146	Barrier Load Cell B2 Fx [N, CFC_60]	B-153
147	Barrier Load Cell B3 Fx [N, CFC_60]	B-154
148	Barrier Load Cell B4 Fx [N, CFC_60]	B-155
149	Barrier Load Cell B5 Fx [N, CFC_60]	B-156
150	Barrier Load Cell B6 Fx [N, CFC_60]	B-157
151	Barrier Load Cell B7 Fx [N, CFC_60]	B-158
152	Barrier Load Cell B8 Fx [N, CFC_60]	B-159
153	Barrier Load Cell B9 Fx [N, CFC_60]	B-160
154	Barrier Load Cell C1 Fx [N, CFC_60]	B-161
155	Barrier Load Cell C2 Fx [N, CFC_60]	B-162
156	Barrier Load Cell C3 Fx [N, CFC_60]	B-163
157	Barrier Load Cell C4 Fx [N, CFC_60]	B-164
158	Barrier Load Cell C5 Fx [N, CFC_60]	B-165
159	Barrier Load Cell C6 Fx [N, CFC_60]	B-166
160	Barrier Load Cell C7 Fx [N, CFC_60]	B-167
161	Barrier Load Cell C8 Fx [N, CFC_60]	B-168
162	Barrier Load Cell C9 Fx [N, CFC_60]	B-169
163	Barrier Load Cell D1 Fx [N, CFC_60]	B-170
164	Barrier Load Cell D2 Fx [N, CFC_60]	B-171
165	Barrier Load Cell D3 Fx [N, CFC_60]	B-172
166	Barrier Load Cell D4 Fx [N, CFC_60]	B-173
167	Barrier Load Cell D5 Fx [N, CFC_60]	B-174
168	Barrier Load Cell D6 Fx [N, CFC_60]	B-175
169	Barrier Load Cell D7 Fx [N, CFC_60]	B-176
170	Barrier Load Cell D8 Fx [N, CFC_60]	B-177
171	Barrier Load Cell D9 Fx [N, CFC_60]	B-178
172	Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)	B-179
173	Group 2 Load Cell Sum (A4,A5,A6,B4,B5,B6)	B-180
174	Group 3 Load Cell Sum (A7,A8,A9,B7,B8,B9)	B-181
175	Group 4 Load Cell Sum (C1,C2,C3,D1,D2,D3)	B-182
176	Group 5 Load Cell Sum (C4,C5,C6,D4,D5,D6)	B-183
177	Group 6 Load Cell Sum (C7,C8,C9,D7,D8,D9)	B-184
178	Total Load Cell Sum (All 6 Groups)	B-185

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head 9 Array X Arm Ay

Max: 2.2 [g] at 0.217 [s]

Min: -8.0 [g] at 0.083 [s]

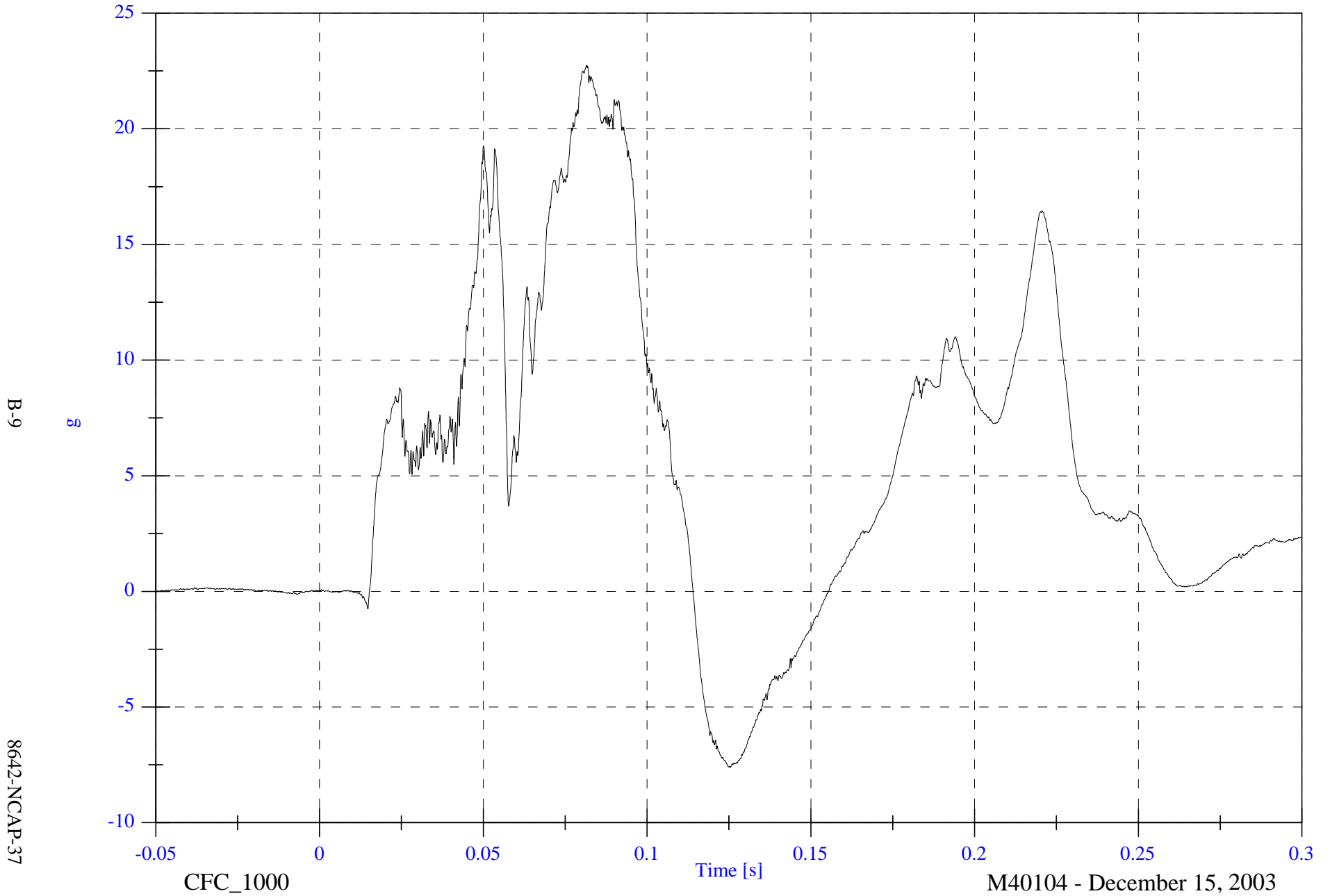


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Head 9 Array X Arm Az

Max: 22.7 [g] at 0.081 [s]

Min: -7.6 [g] at 0.125 [s]

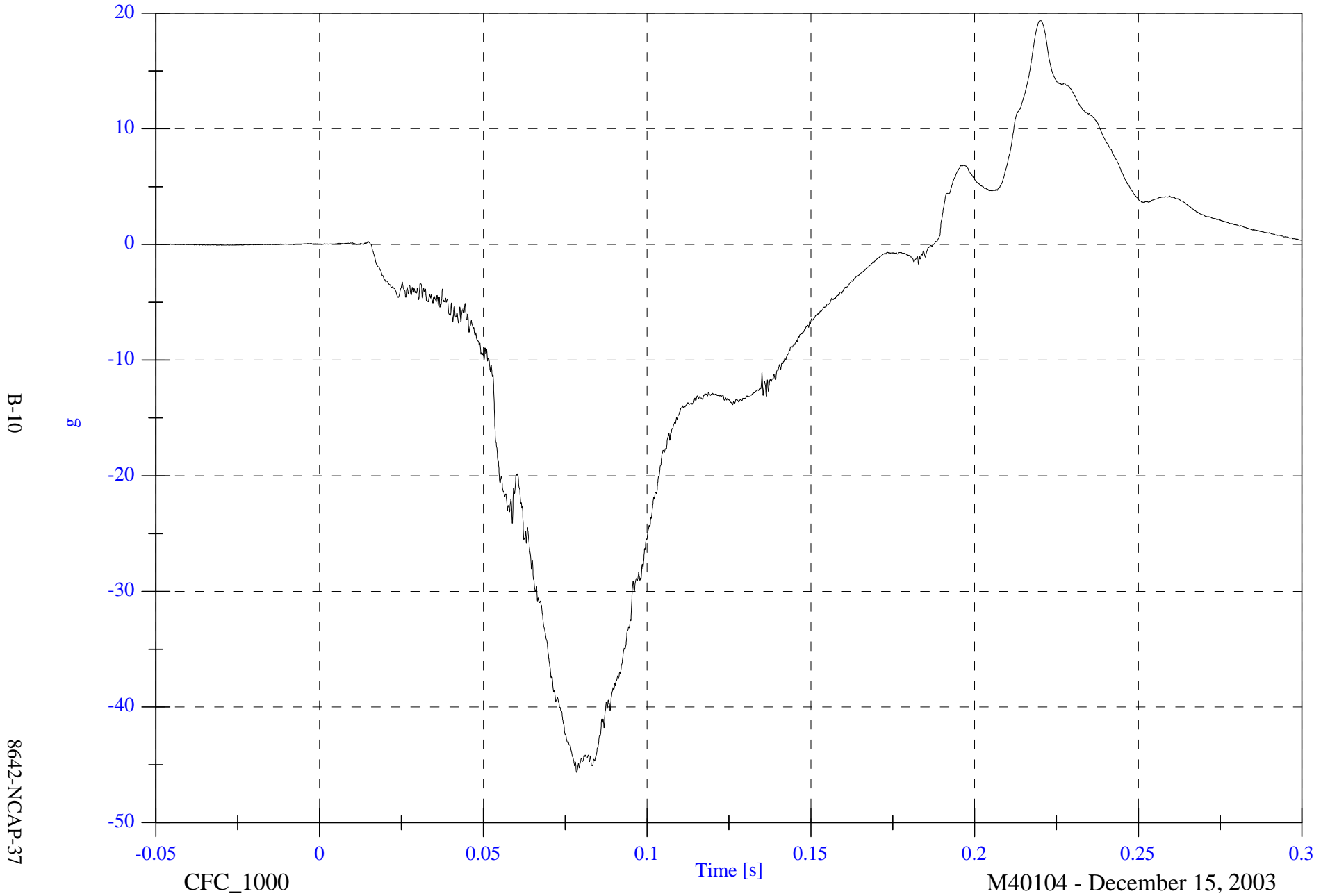


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head 9 Array Y Arm Ax

Max: 19.4 [g] at 0.220 [s]

Min: -45.7 [g] at 0.079 [s]



B-10

8642-NCAP-37

CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

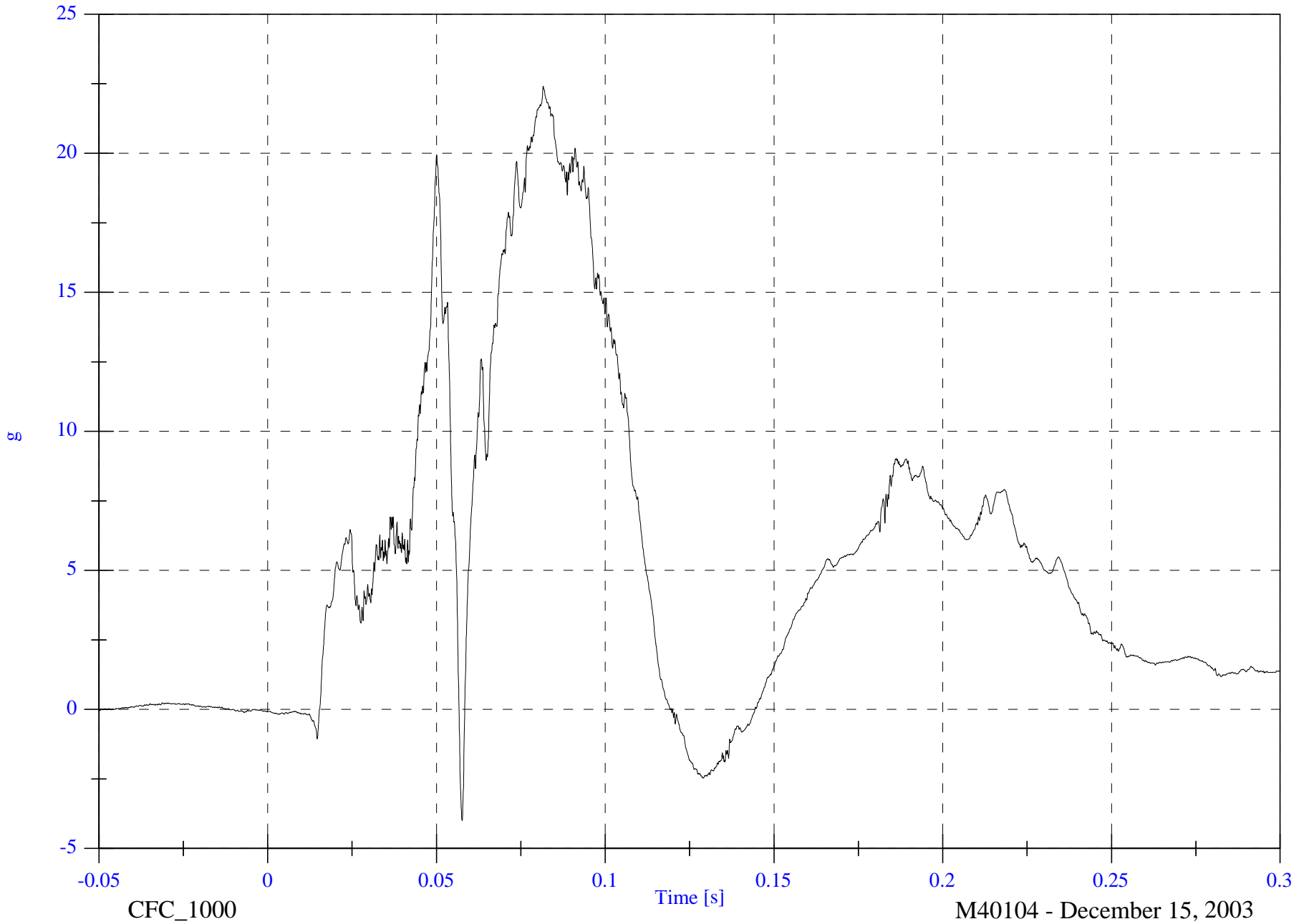
Max: 22.4 [g] at 0.082 [s]

VIP1 Head 9 Array Y Arm Az

Min: -4.0 [g] at 0.058 [s]

B-11

8642-NCAP-37

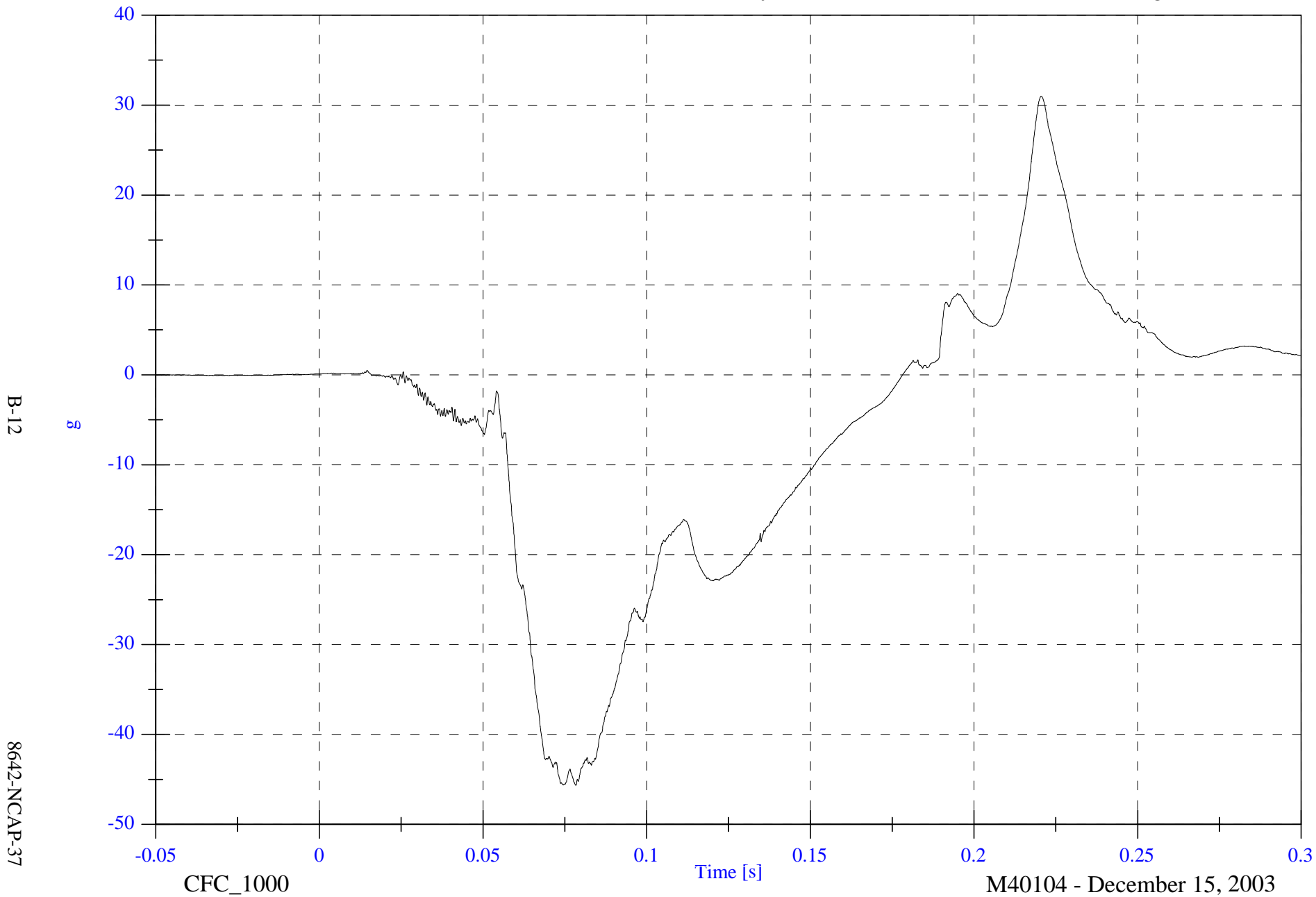


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head 9 Array Z Arm Ax

Max: 31.0 [g] at 0.220 [s]

Min: -45.6 [g] at 0.078 [s]



B-12

8642-NCAP-37

CFC_1000

Time [s]

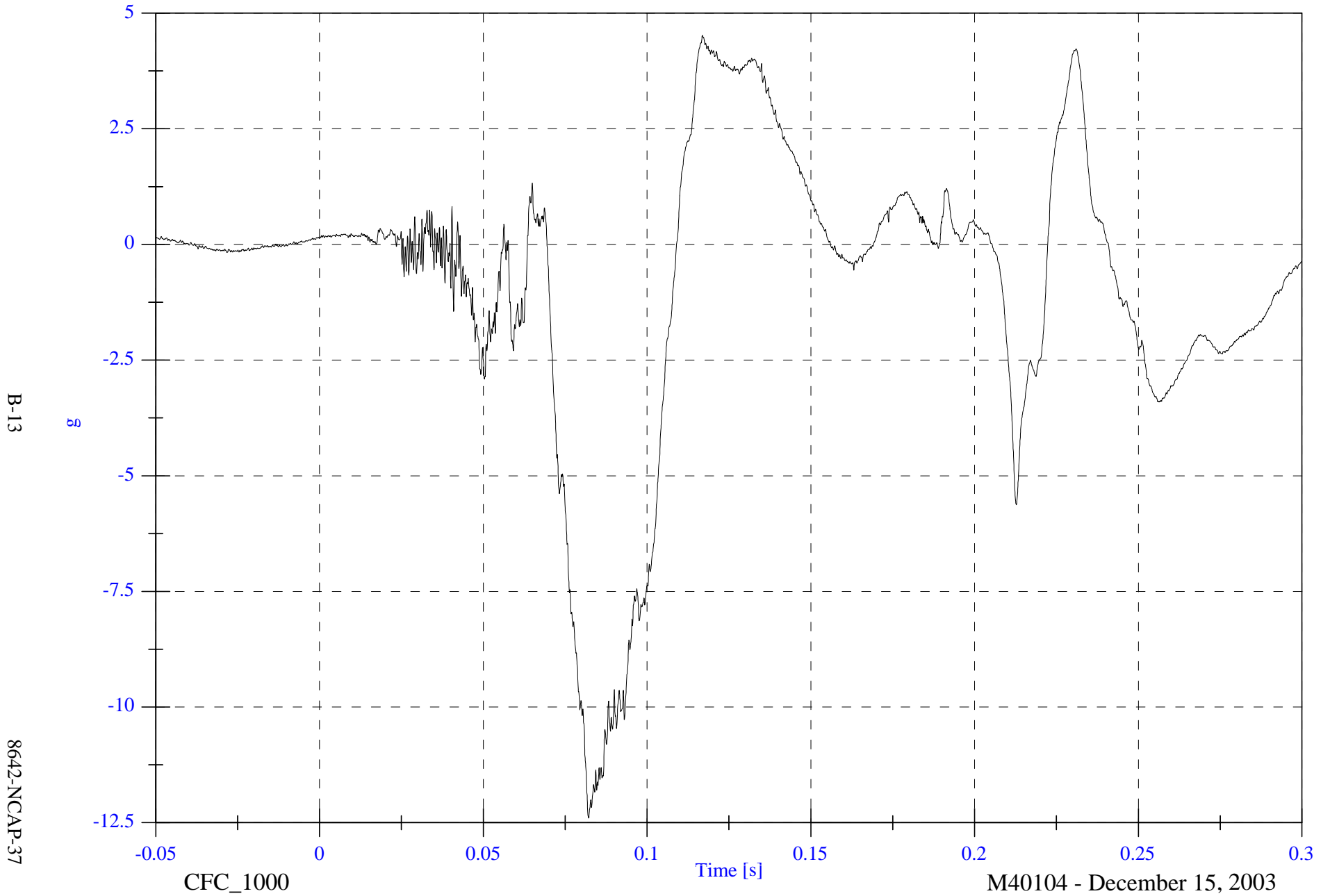
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head 9 Array Z Arm Ay

Max: 4.5 [g] at 0.117 [s]

Min: -12.4 [g] at 0.082 [s]

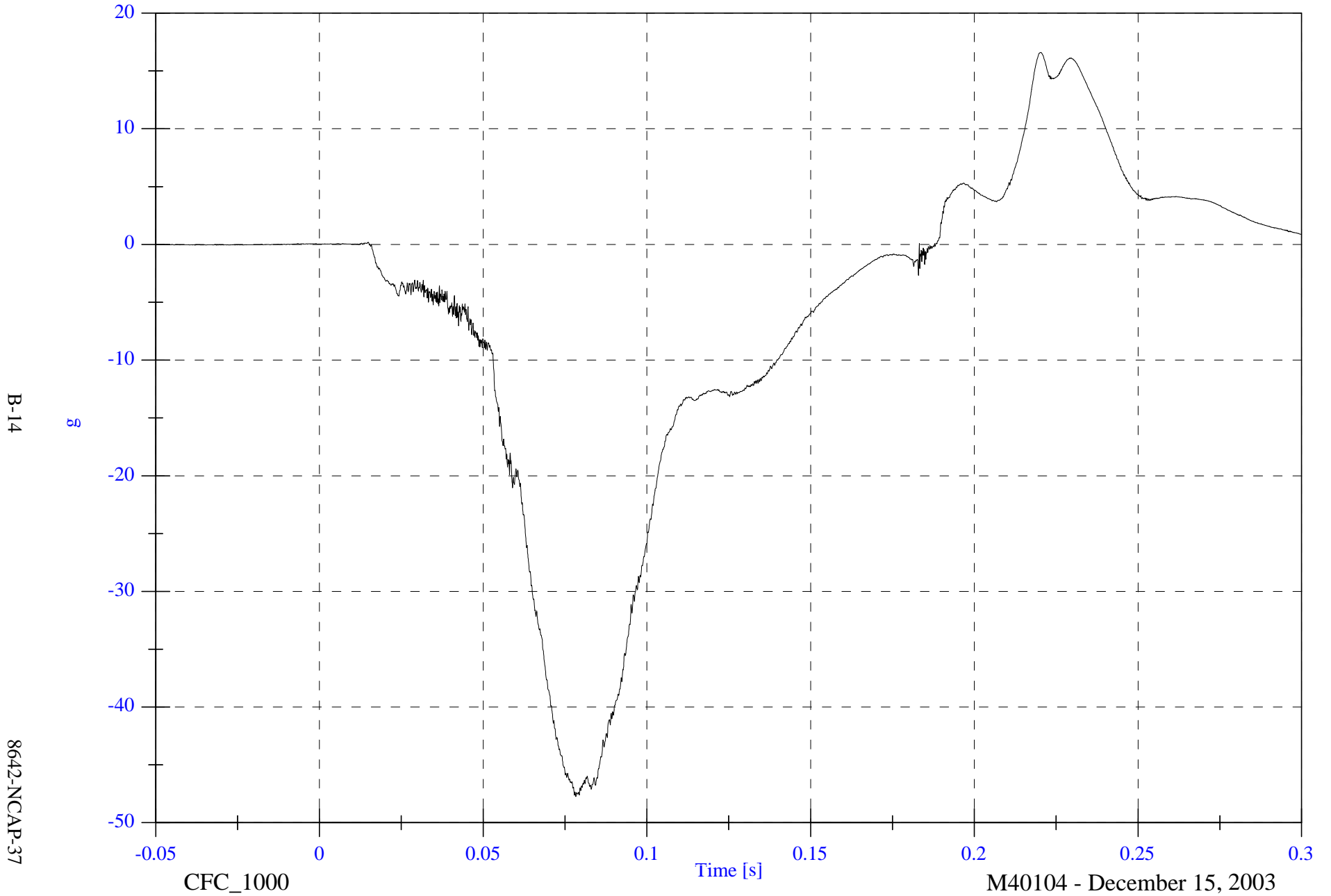


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head CG x

Max: 16.6 [g] at 0.220 [s]

Min: -47.7 [g] at 0.078 [s]

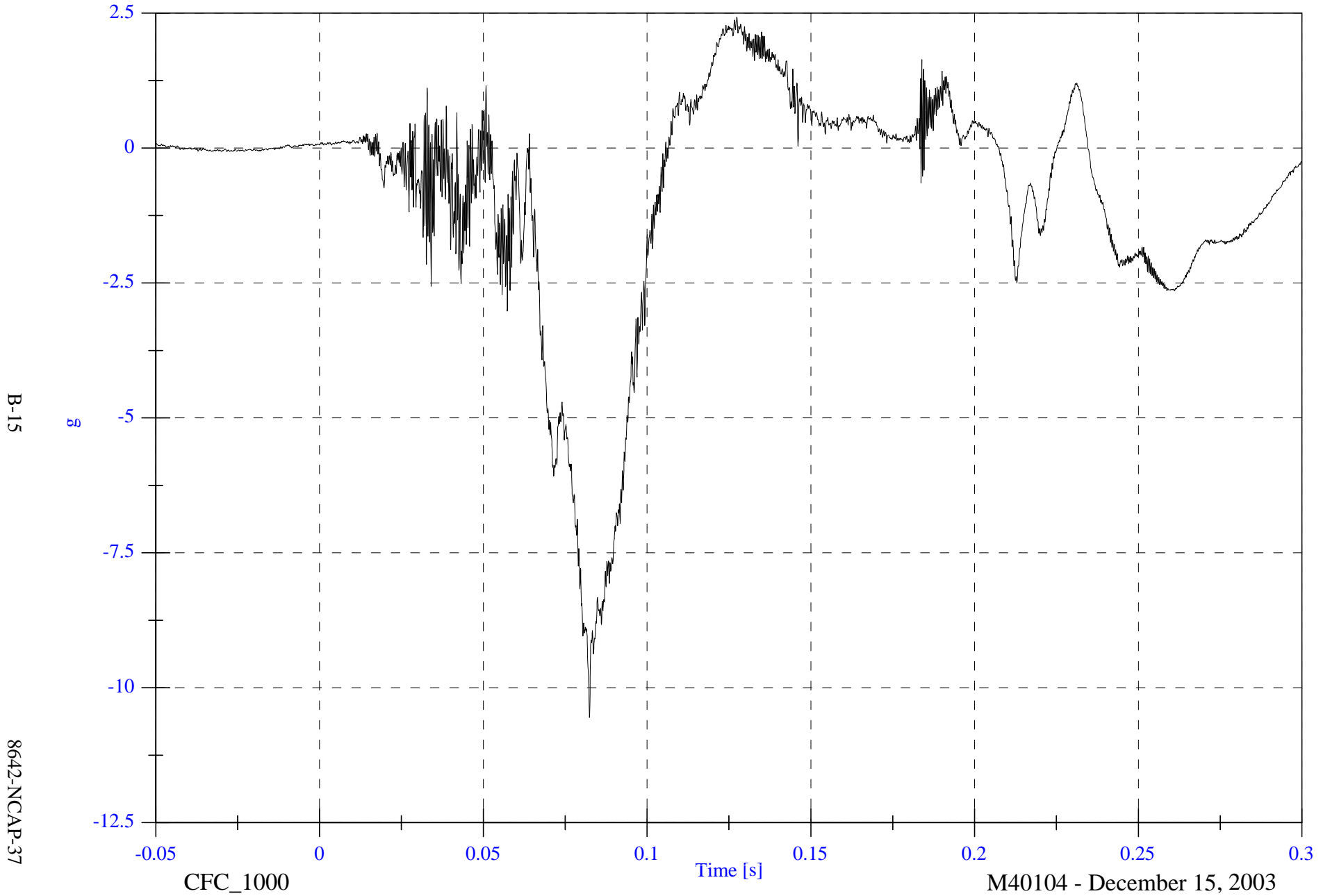


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head CG y

Max: 2.4 [g] at 0.127 [s]

Min: -10.5 [g] at 0.082 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

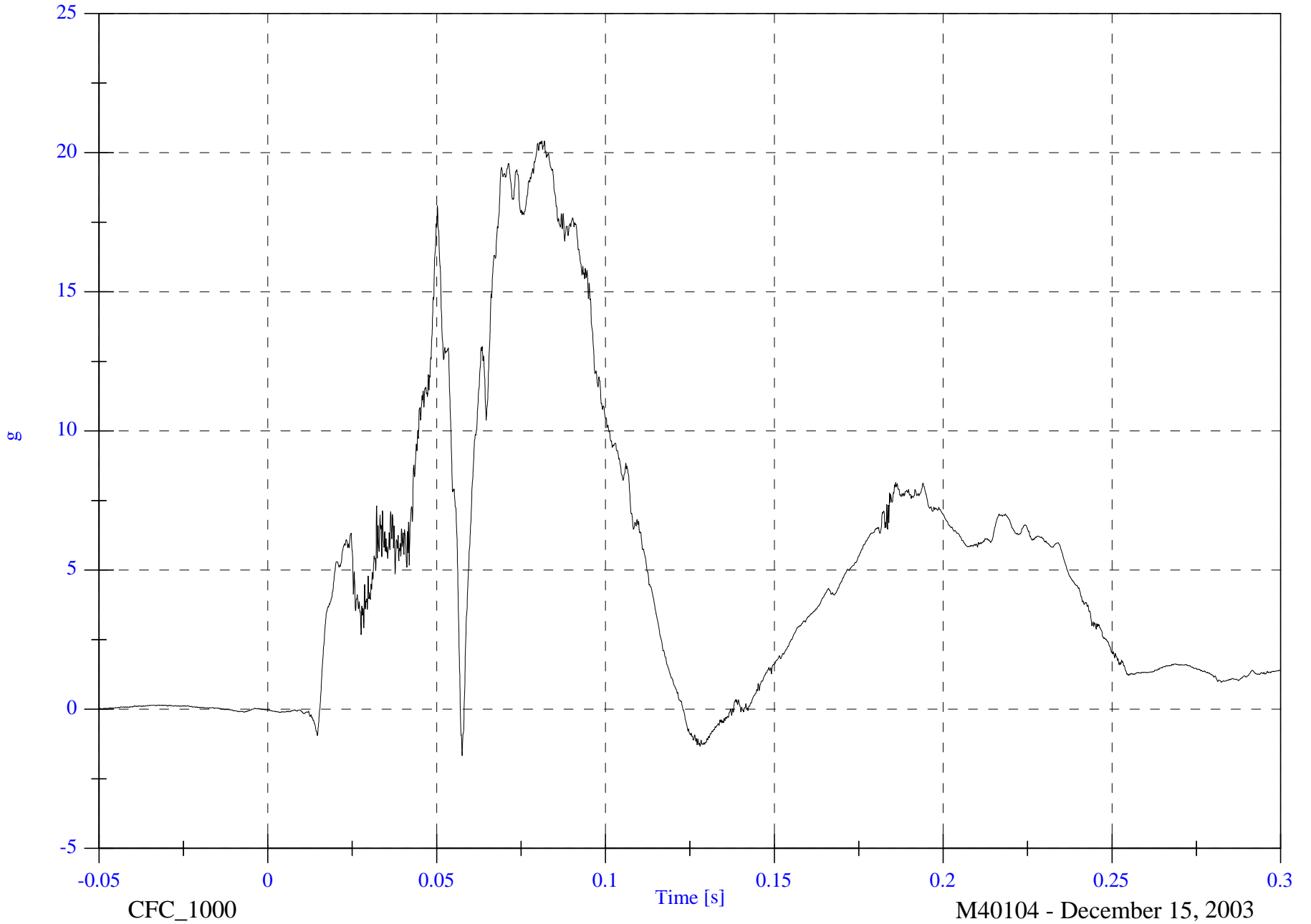
V1P1 Head CG z

Max: 20.4 [g] at 0.081 [s]

Min: -1.7 [g] at 0.058 [s]

B-16

8642-NCAP-37



CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

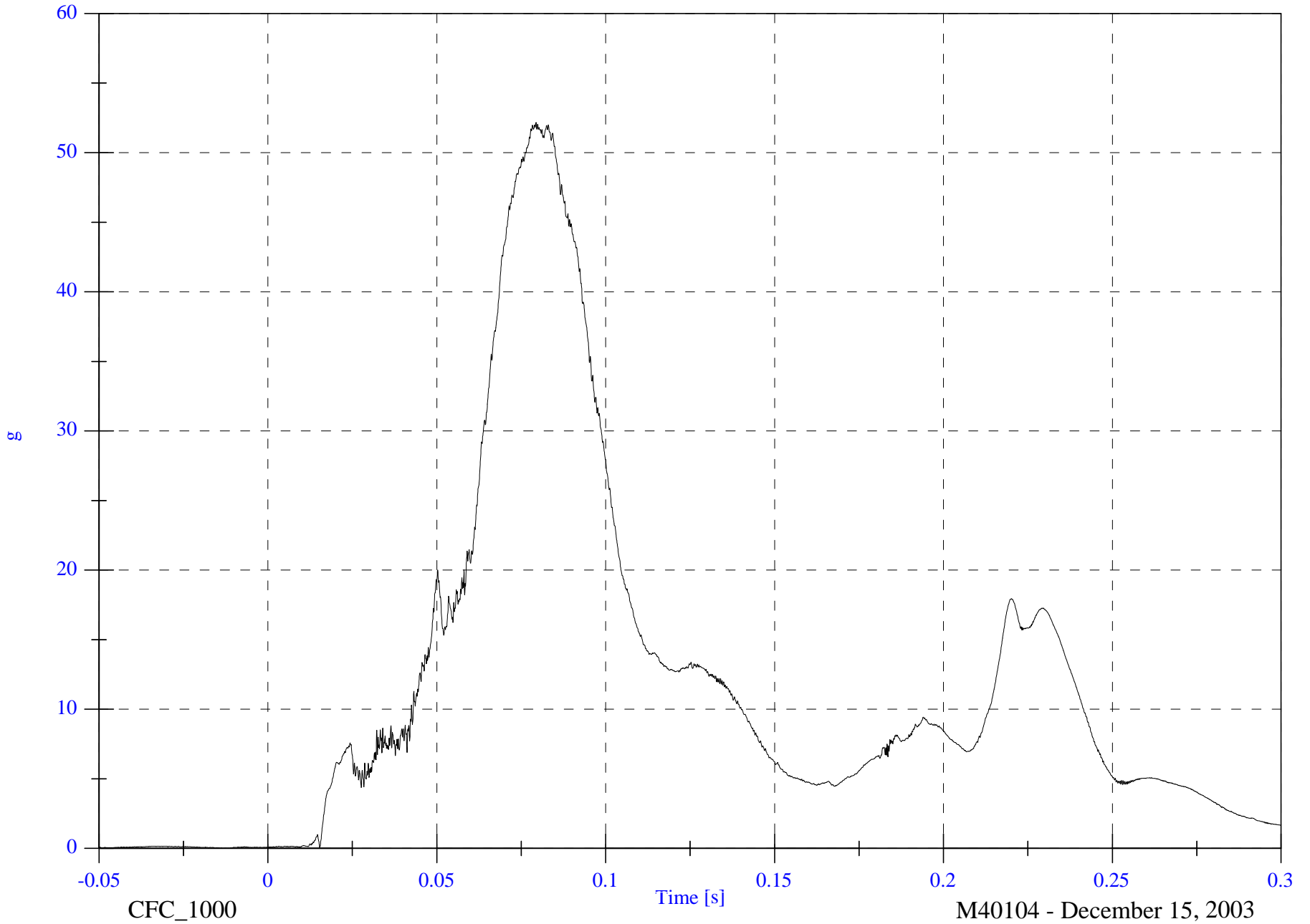
V1P1 Head CG Resultant

Max: 52.2 [g] at 0.079 [s]

Min: 0.0 [g] at -0.012 [s]

B-17

8642-NCAP-37



CFC_1000

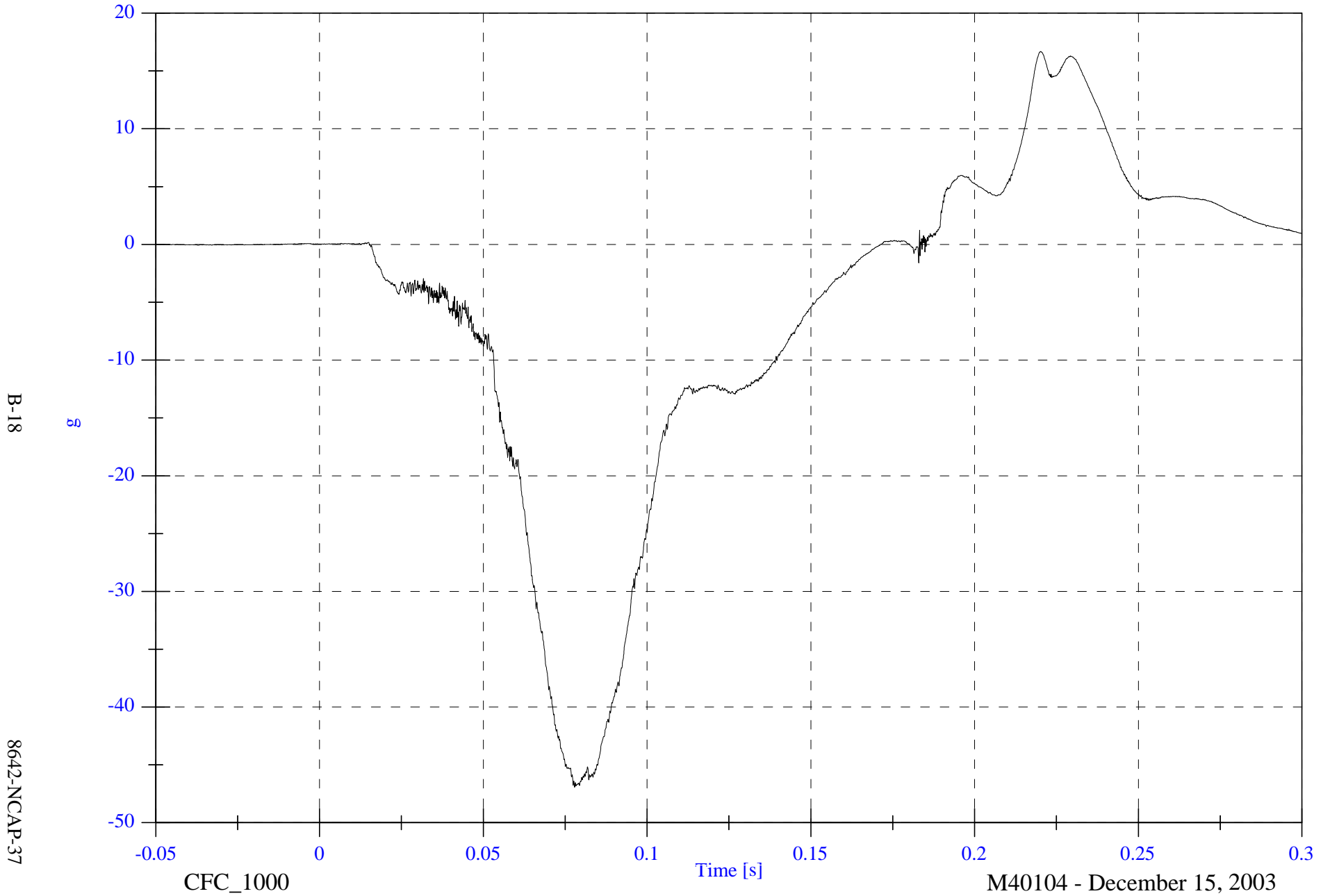
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head CG Red x

Max: 16.7 [g] at 0.220 [s]

Min: -46.9 [g] at 0.078 [s]



B-18

8642-NCAP-37

CFC_1000

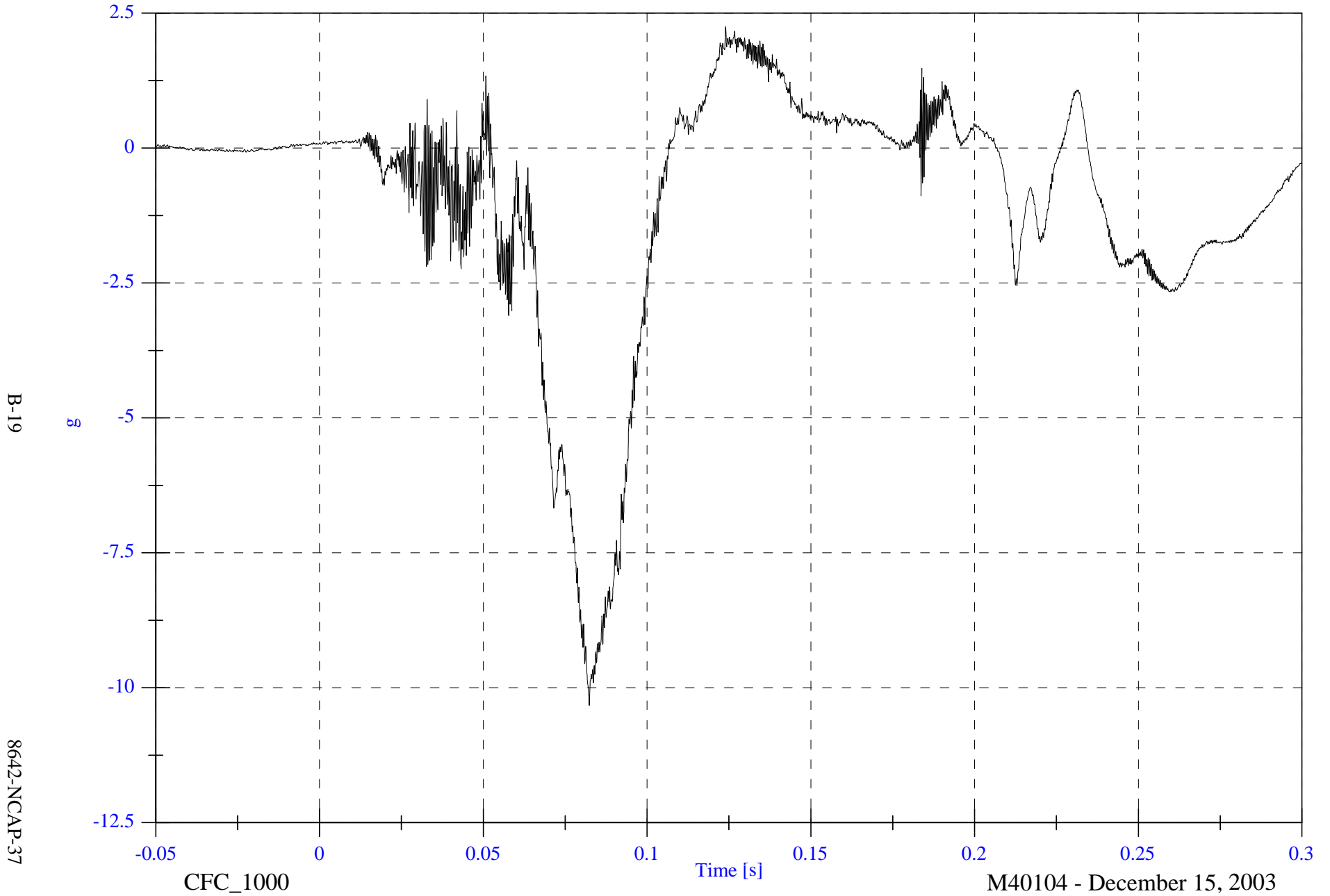
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head CG Red y

Max: 2.2 [g] at 0.124 [s]

Min: -10.3 [g] at 0.082 [s]

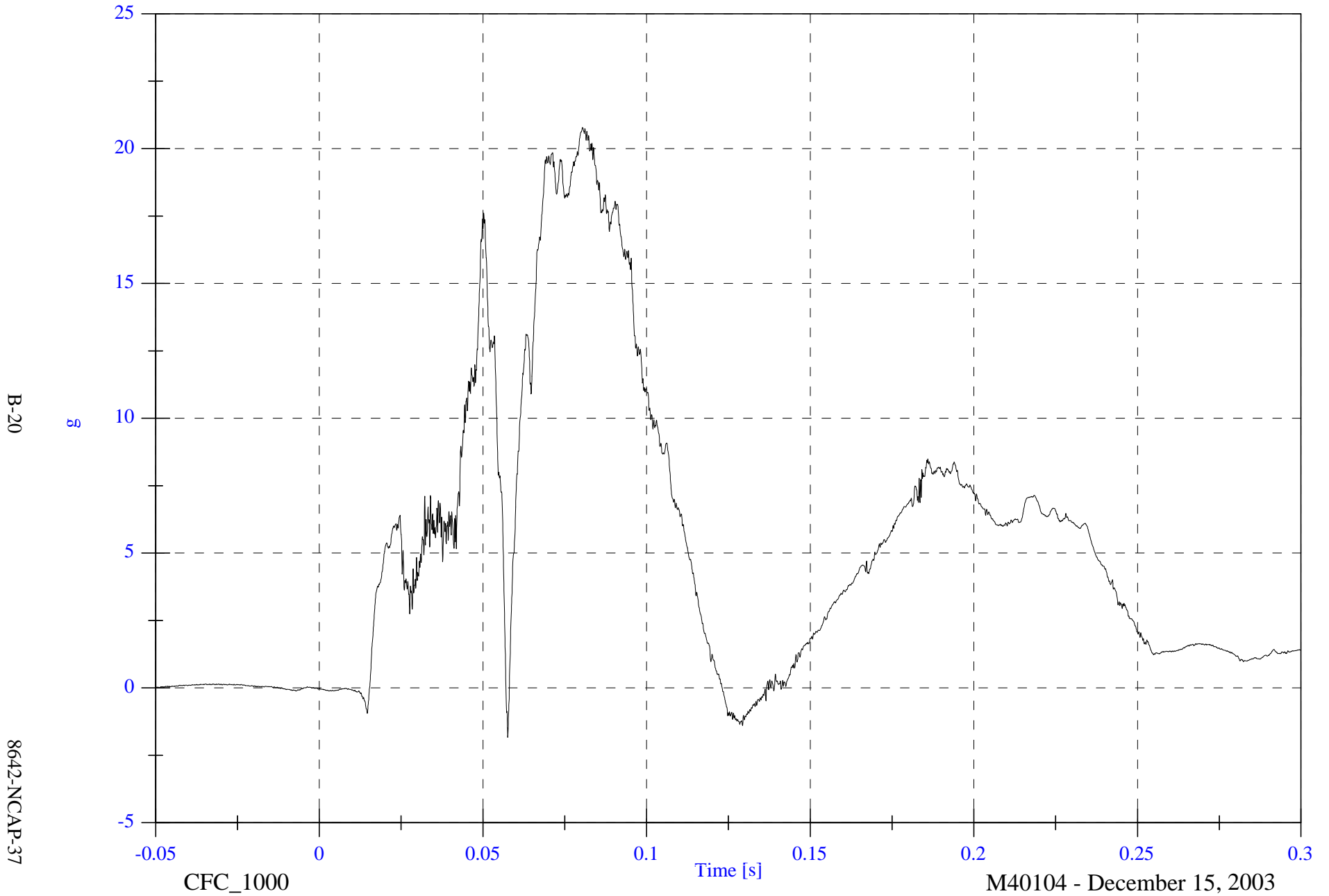


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 20.8 [g] at 0.080 [s]

Min: -1.8 [g] at 0.058 [s]

V1P1 Head CG Red z



B-20

8642-NCAP-37

CFC_1000

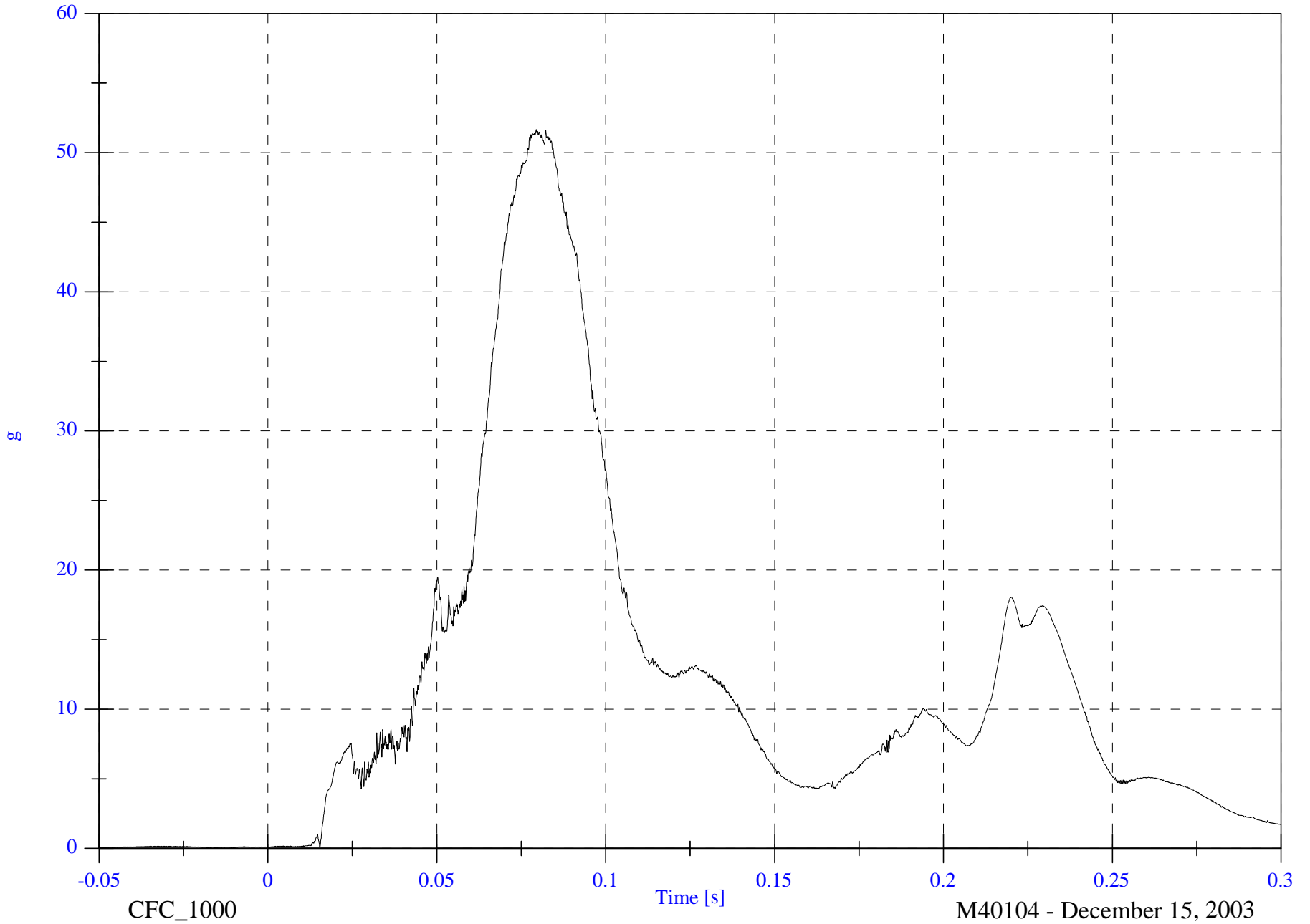
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Head CG Red Resultant

Max: 51.7 [g] at 0.079 [s]

Min: 0.0 [g] at -0.013 [s]



B-21

8642-NCAP-37

CFC_1000

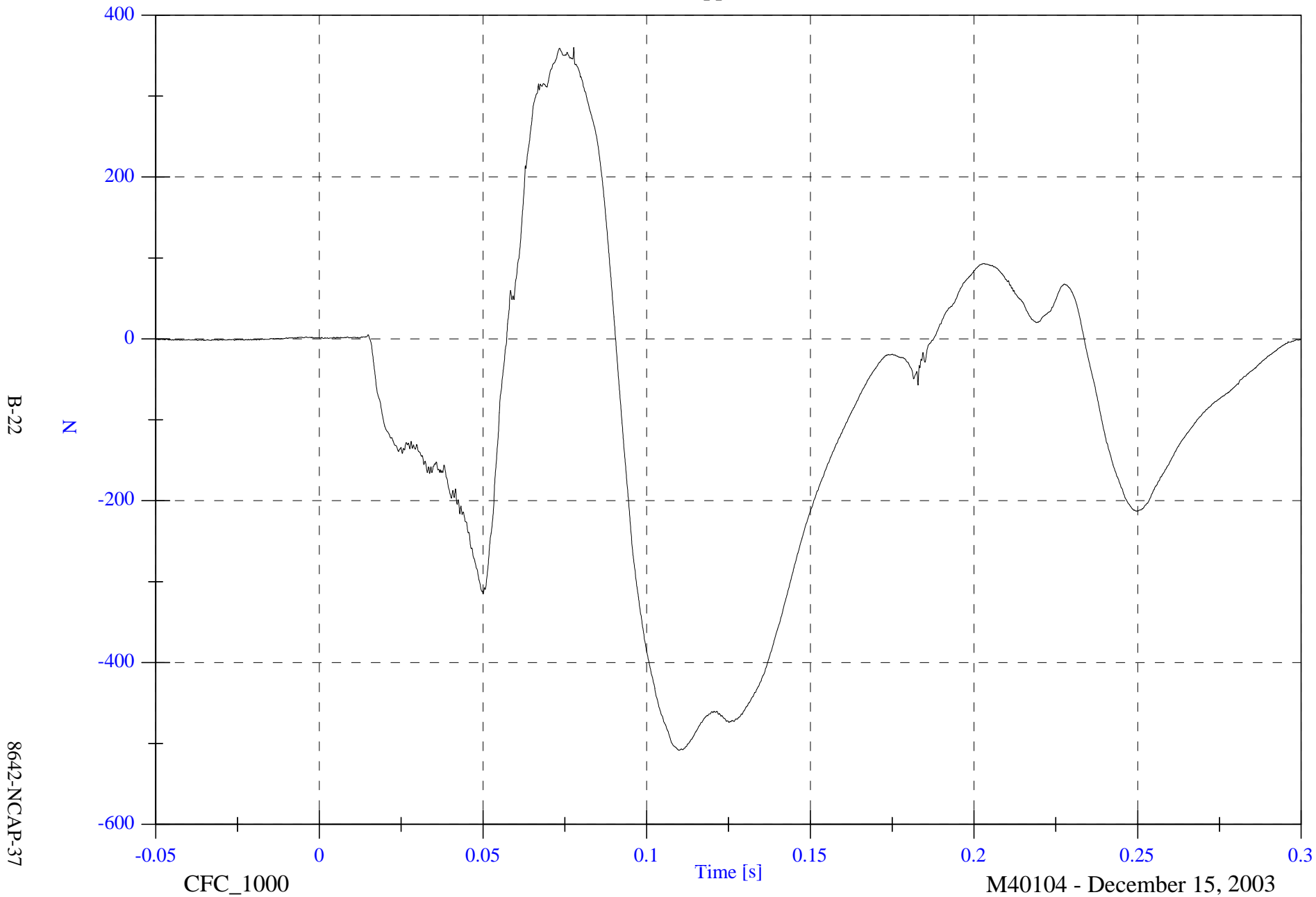
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 360.0 [N] at 0.078 [s]

Min: -508.3 [N] at 0.110 [s]

V1P1 Upper Neck Fx



B-22

8642-NCAP-37

CFC_1000

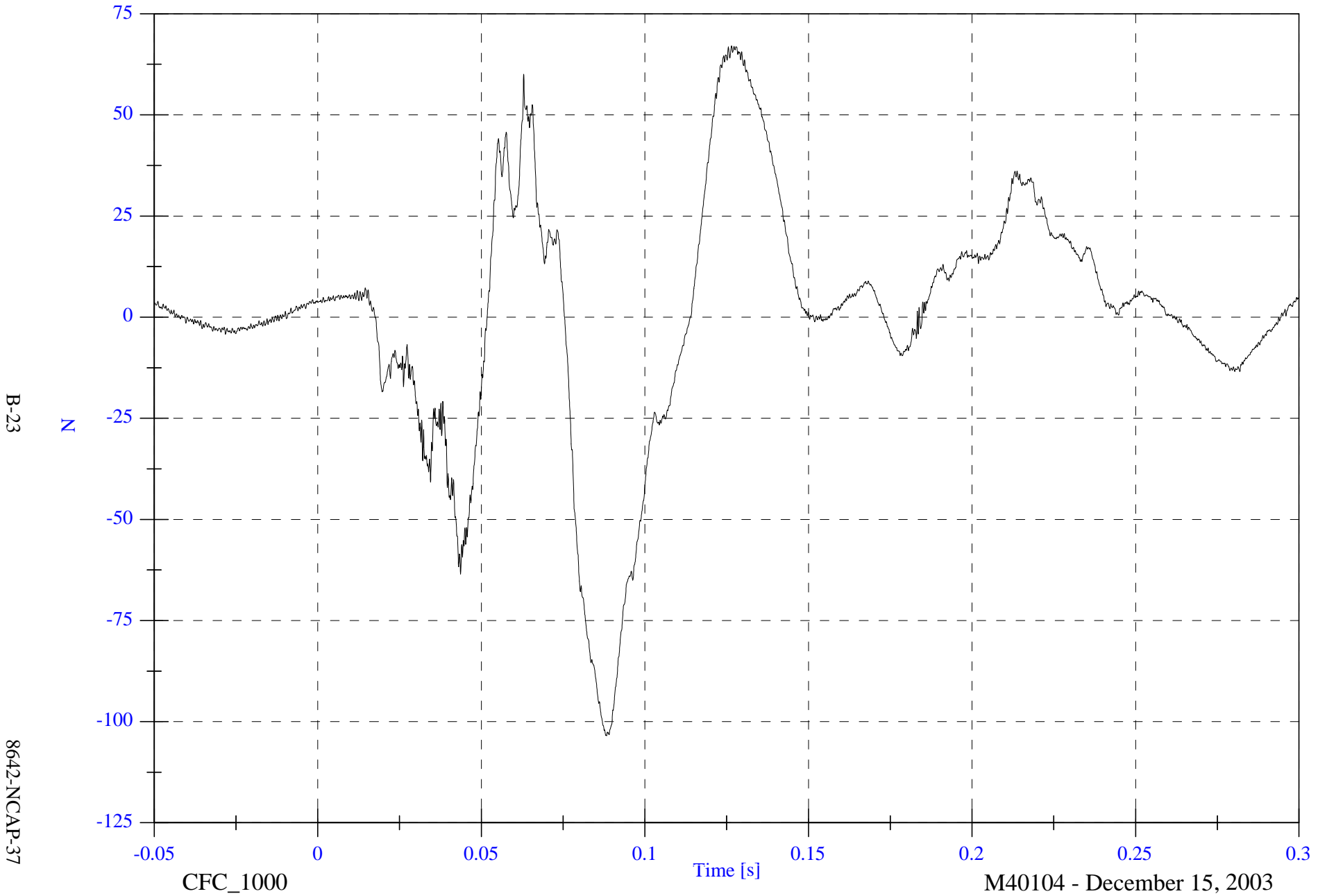
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 67.1 [N] at 0.126 [s]

Min: -103.5 [N] at 0.088 [s]

V1P1 Upper Neck Fy



B-23

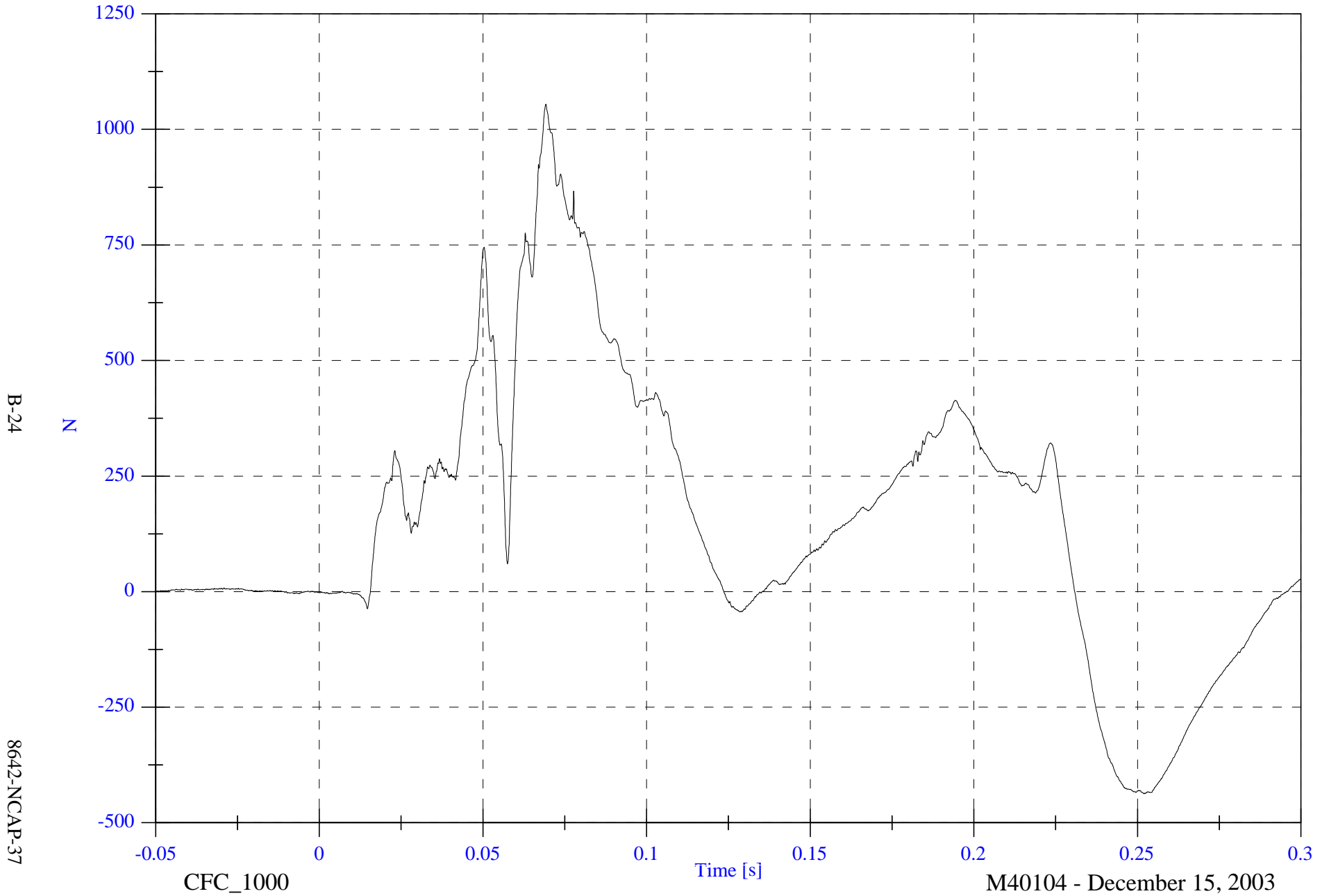
8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1054.4 [N] at 0.069 [s]

Min: -437.3 [N] at 0.252 [s]

V1P1 Upper Neck Fz



B-24

8642-NCAP-37

CFC_1000

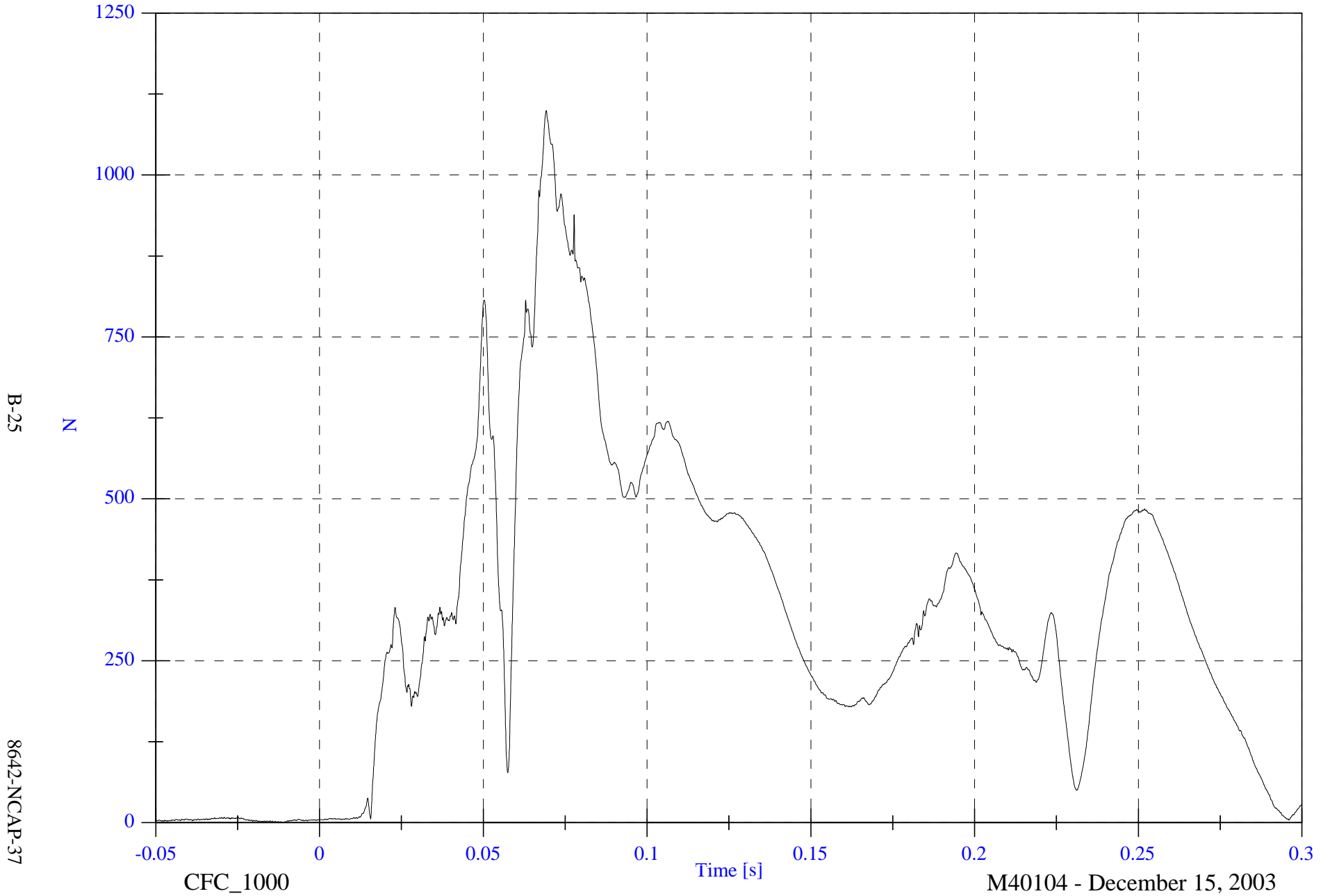
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1099.7 [N] at 0.069 [s]

V1P1 Upper Neck F Resultant

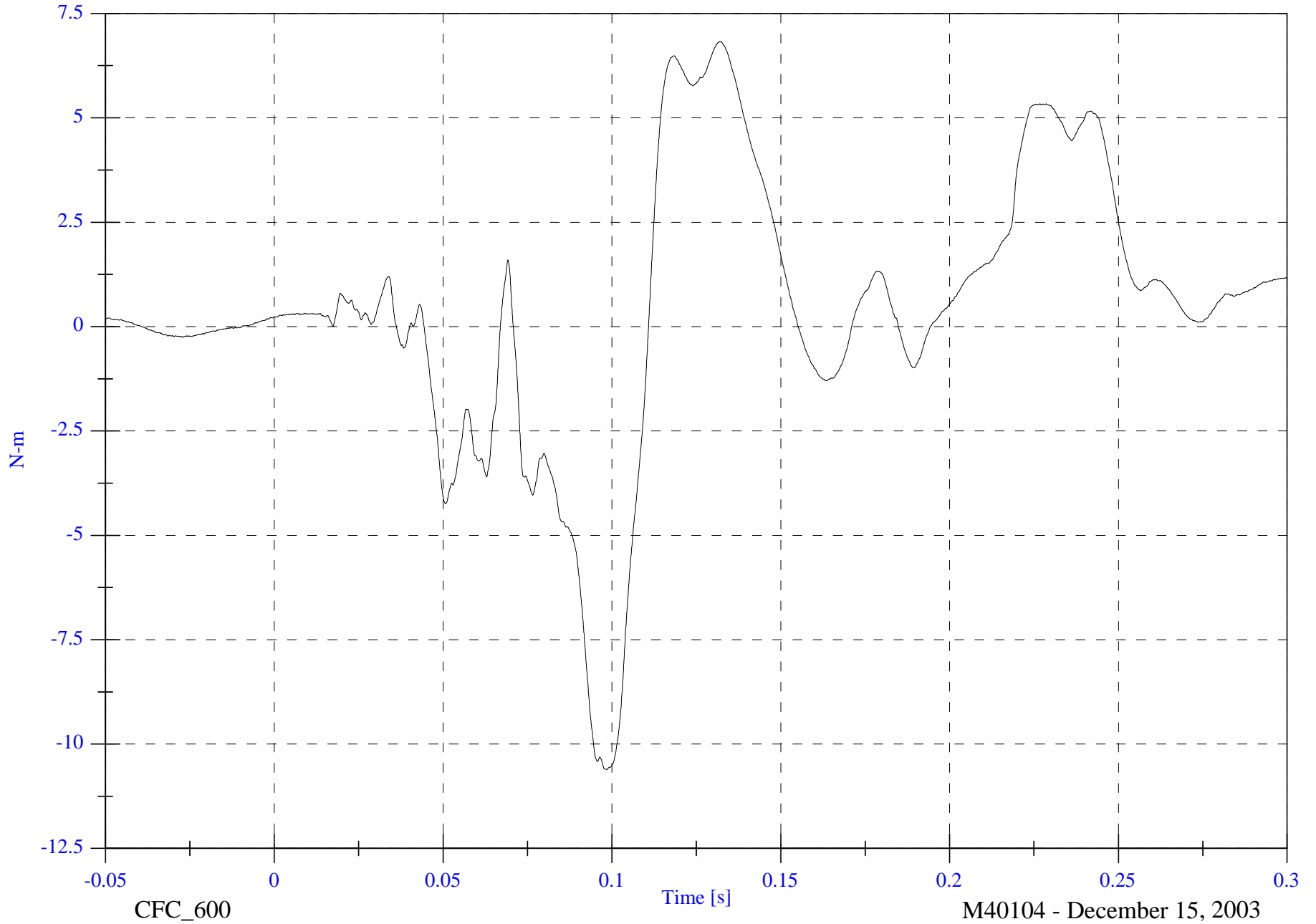
Min: 0.2 [N] at -0.011 [s]



V1P1 Upper Neck Mx

B-26

8642-NCAP-37

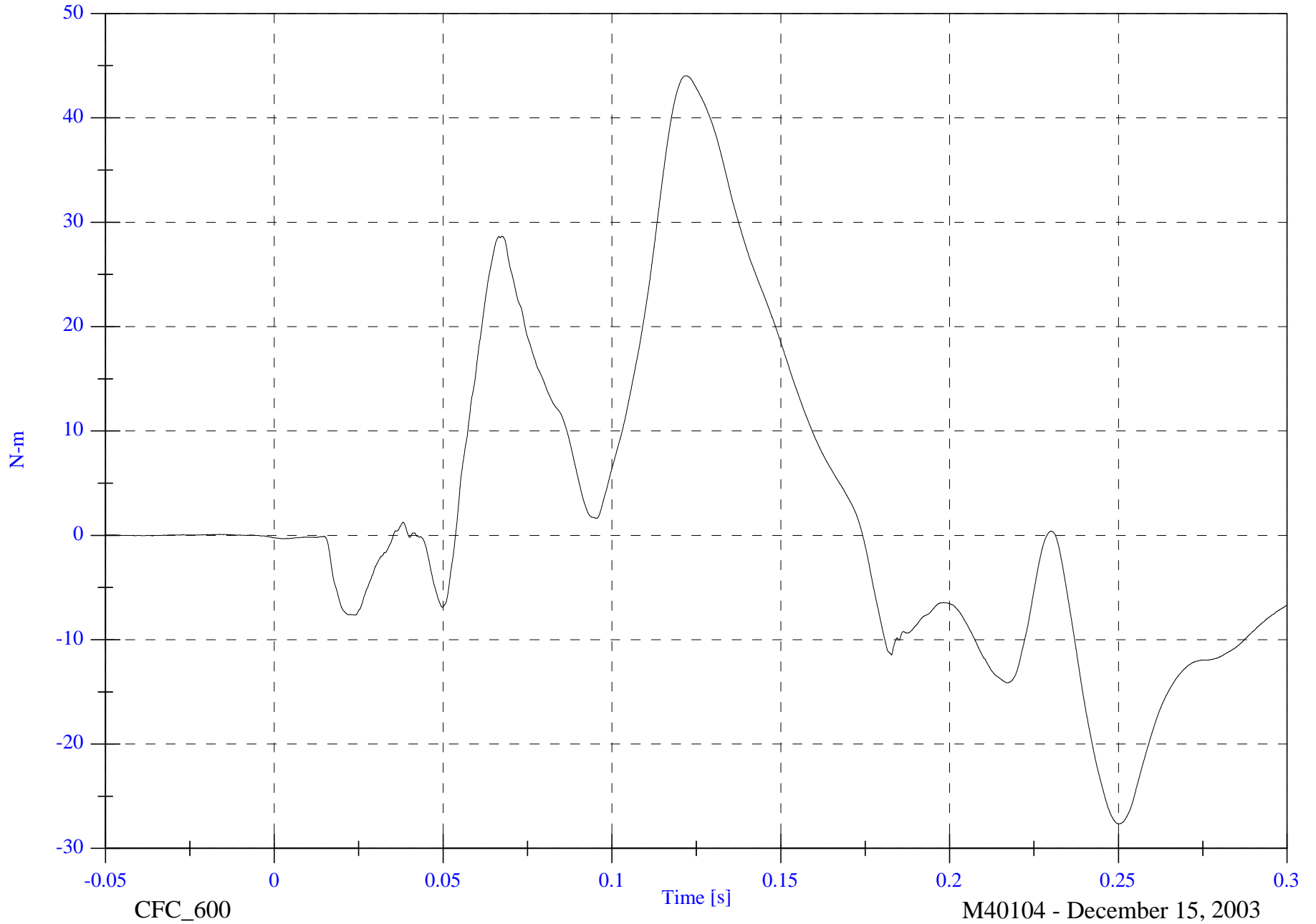


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 44.0 [N-m] at 0.122 [s]

Min: -27.6 [N-m] at 0.250 [s]

V1P1 Upper Neck My



B-27

8642-NCAP-37

CFC_600

Time [s]

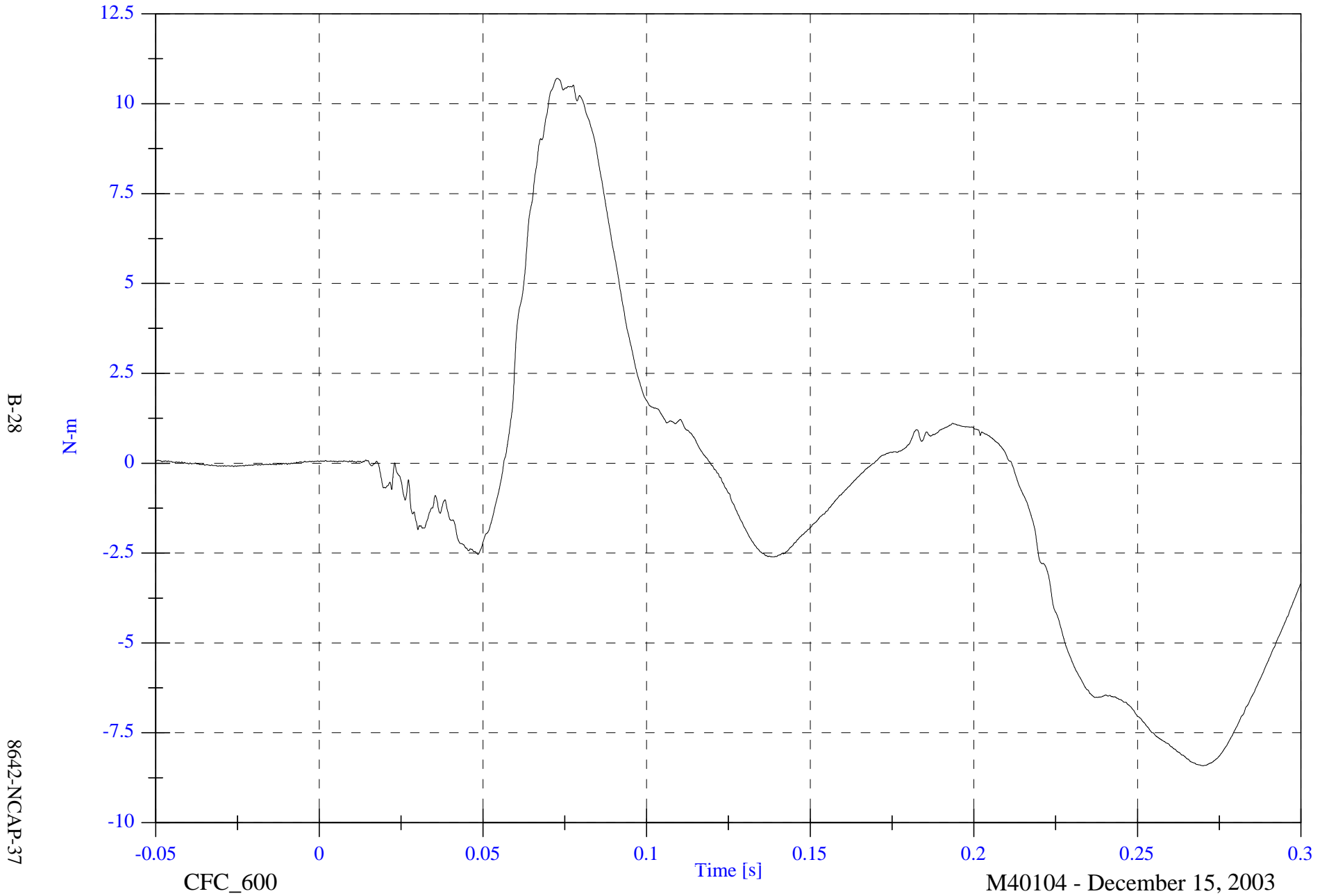
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 10.7 [N-m] at 0.073 [s]

Min: -8.4 [N-m] at 0.270 [s]

V1P1 Upper Neck Mz



B-28

8642-NCAP-37

CFC_600

Time [s]

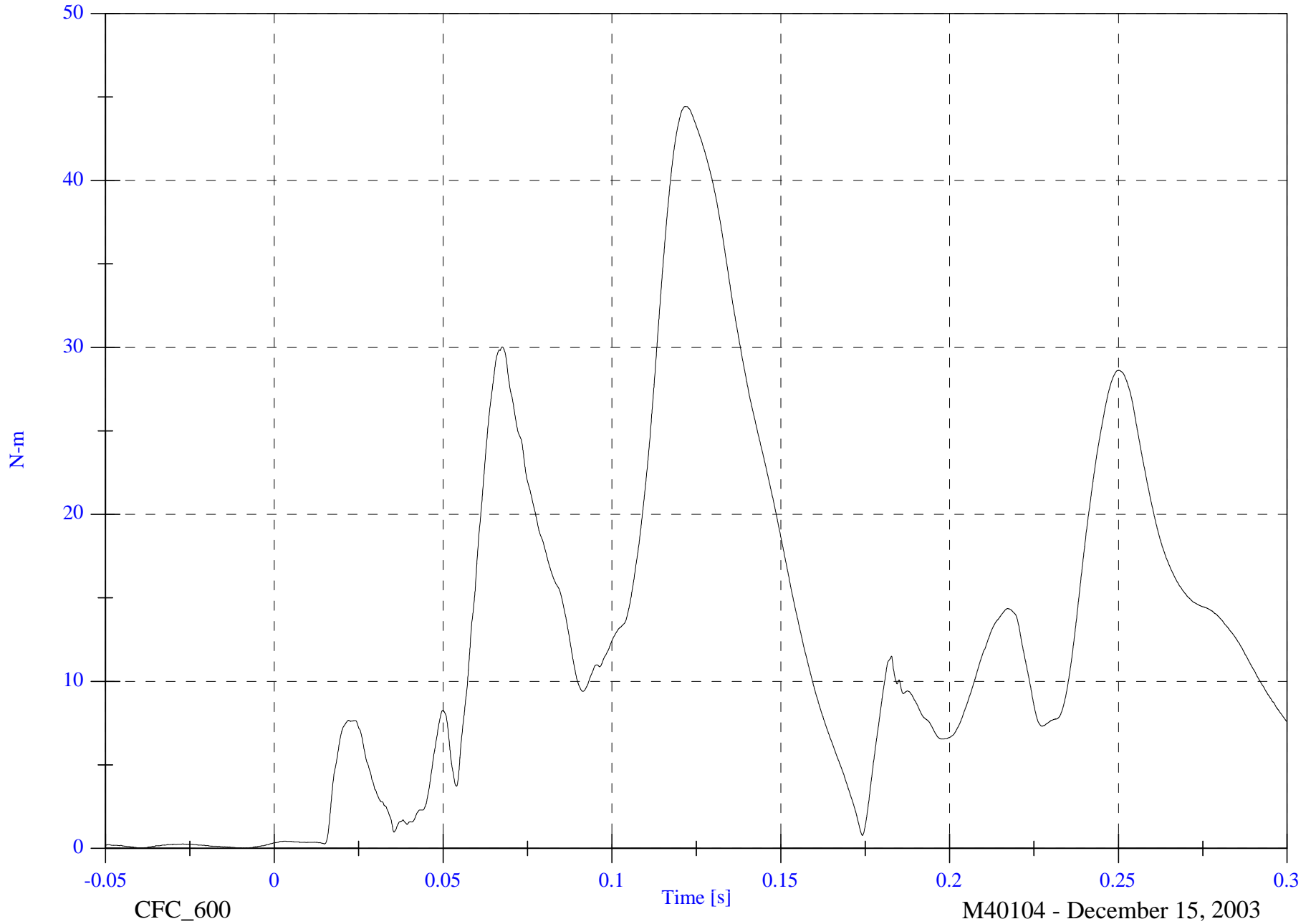
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Upper Neck M Resultant

Max: 44.4 [N-m] at 0.122 [s]

Min: 0.0 [N-m] at -0.009 [s]



B-29

8642-NCAP-37

CFC_600

Time [s]

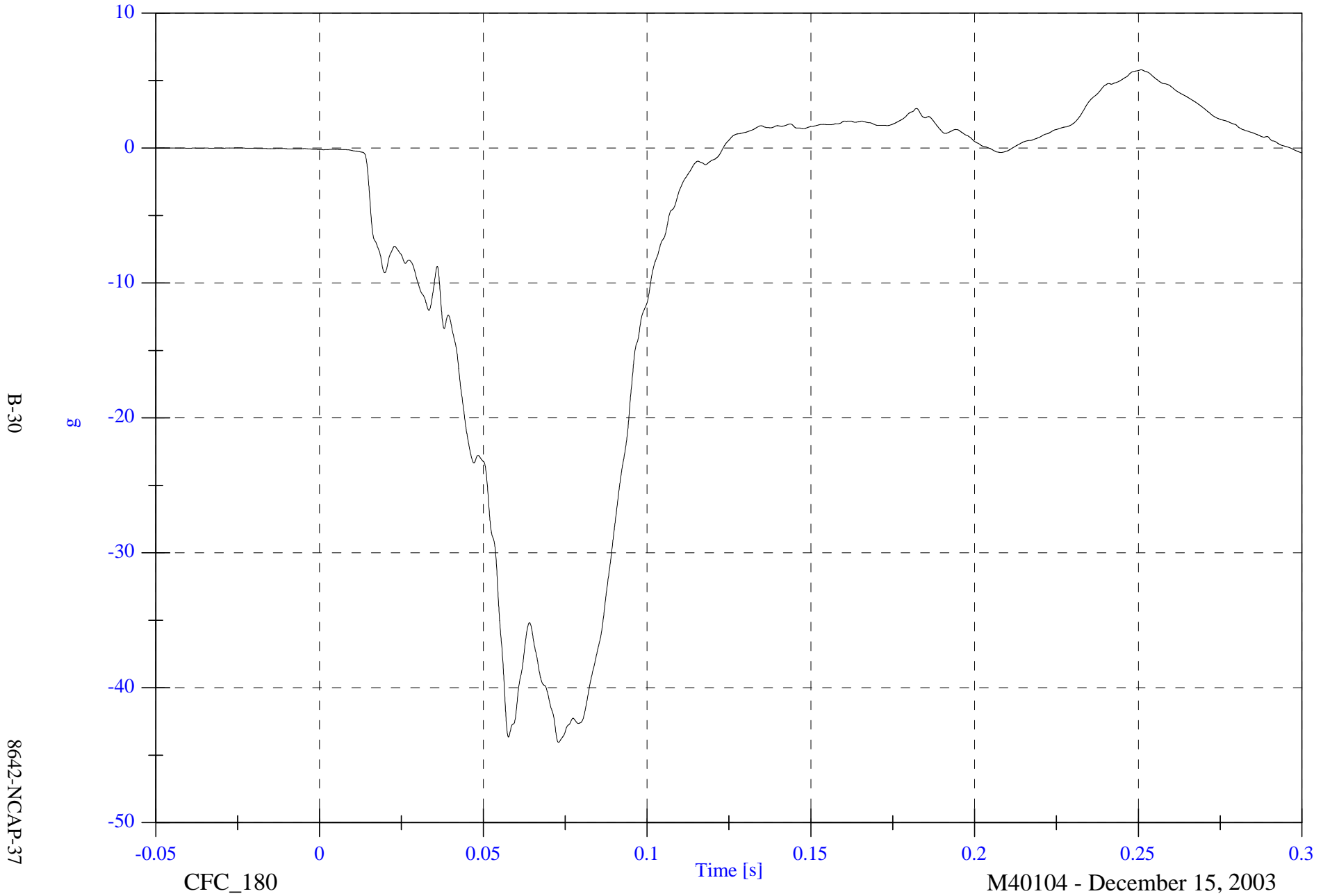
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Chest x

Max: 5.8 [g] at 0.251 [s]

Min: -44.1 [g] at 0.073 [s]



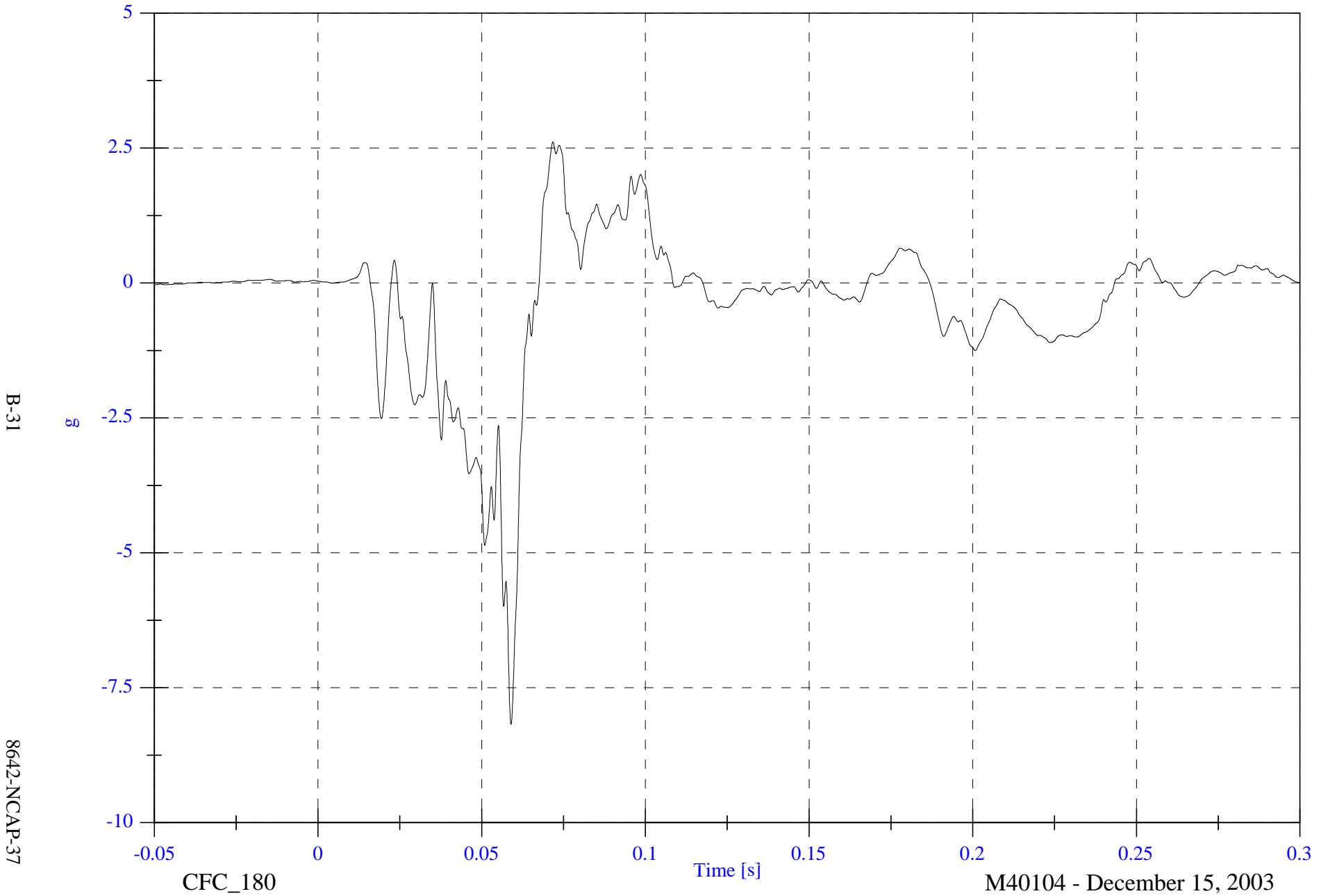
B-30

8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 2.6 [g] at 0.072 [s]
Min: -8.2 [g] at 0.059 [s]

VIP1 Chest y



B-31

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

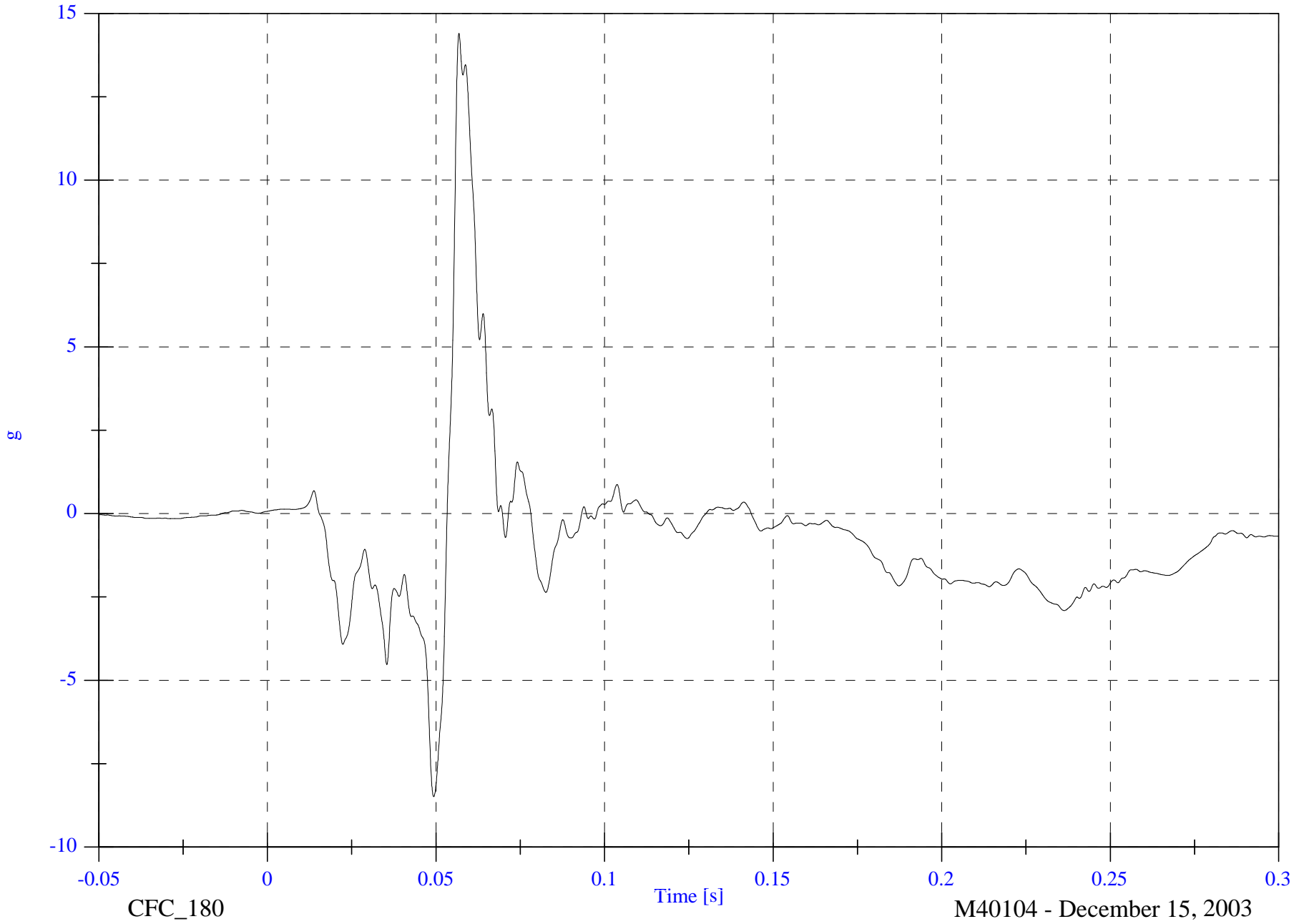
VIP1 Chest z

Max: 14.4 [g] at 0.057 [s]

Min: -8.5 [g] at 0.049 [s]

B-32

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

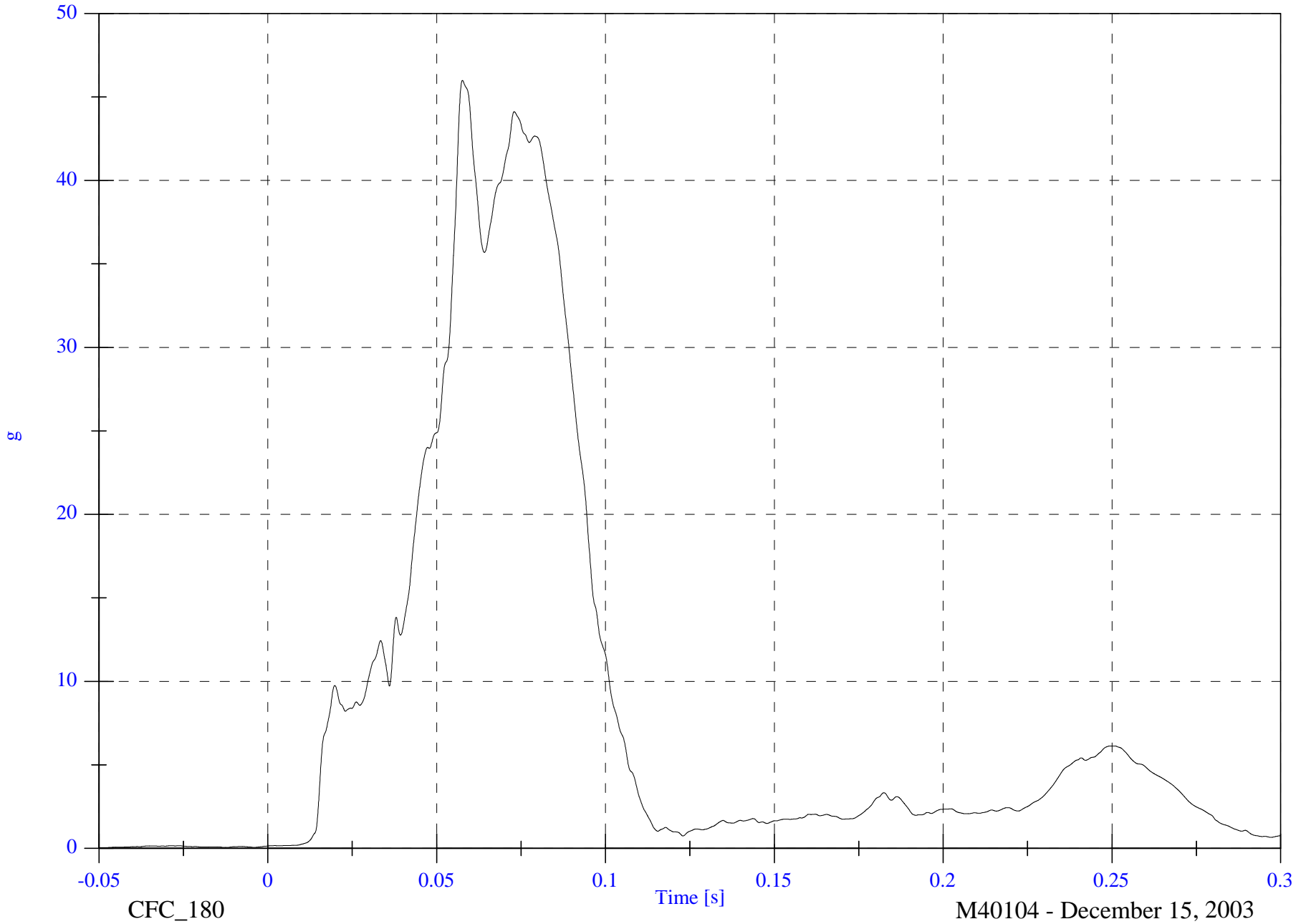
V1P1 Chest Resultant

Max: 46.0 [g] at 0.058 [s]

Min: 0.0 [g] at -0.049 [s]

B-33

8642-NCAP-37



CFC_180

Time [s]

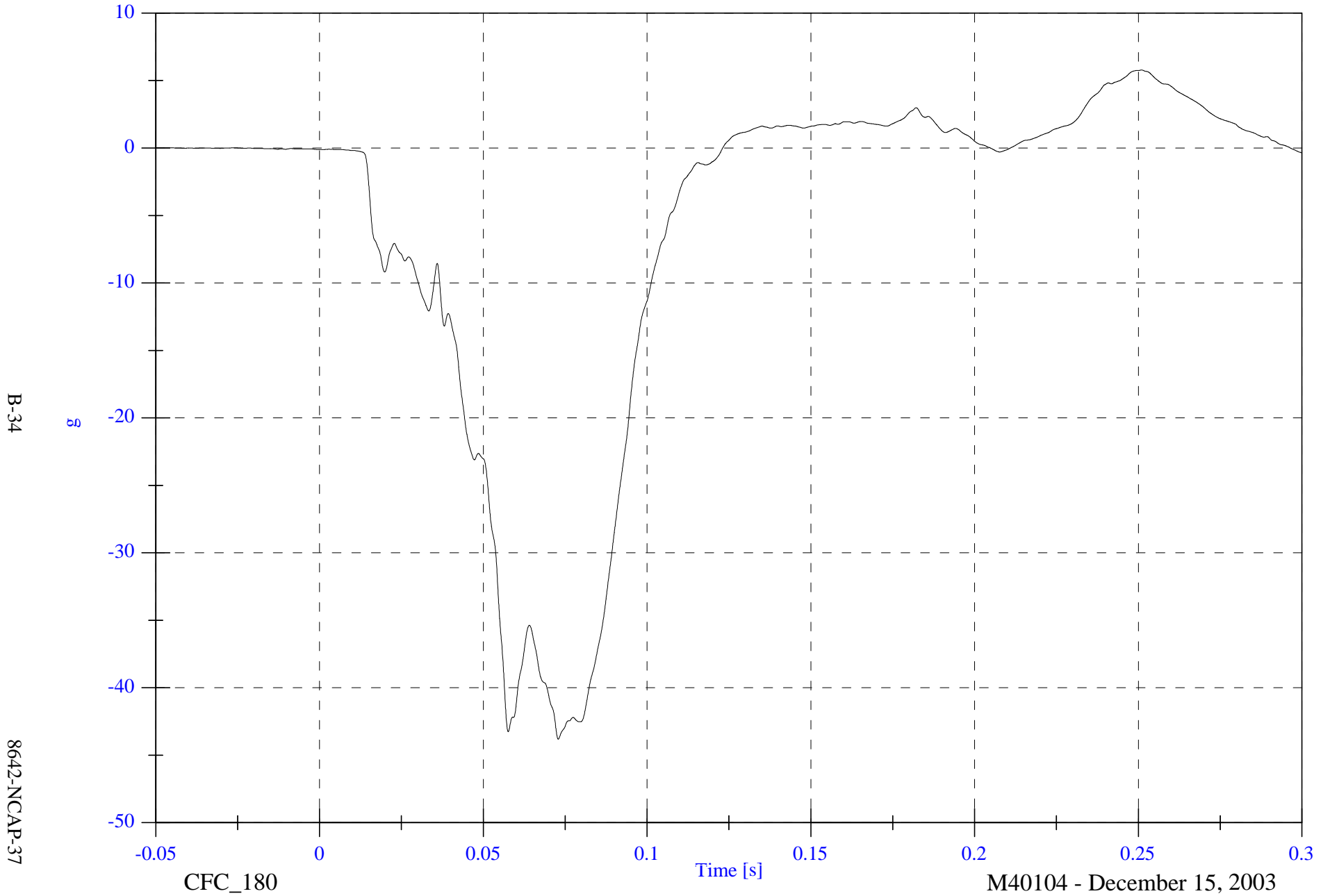
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Chest Red x

Max: 5.8 [g] at 0.251 [s]

Min: -43.8 [g] at 0.073 [s]



B-34

8642-NCAP-37

CFC_180

Time [s]

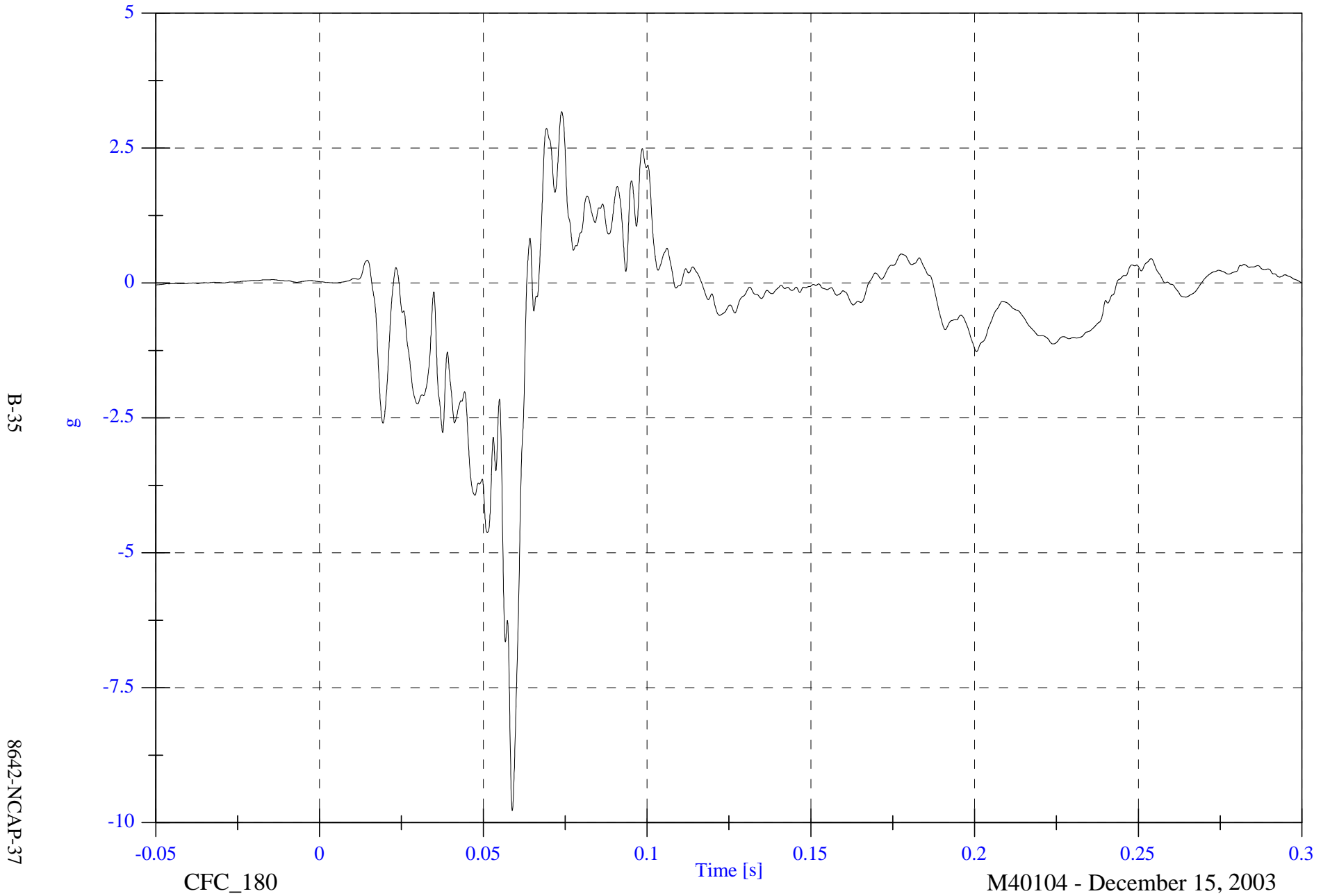
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Chest Red y

Max: 3.2 [g] at 0.074 [s]

Min: -9.8 [g] at 0.059 [s]

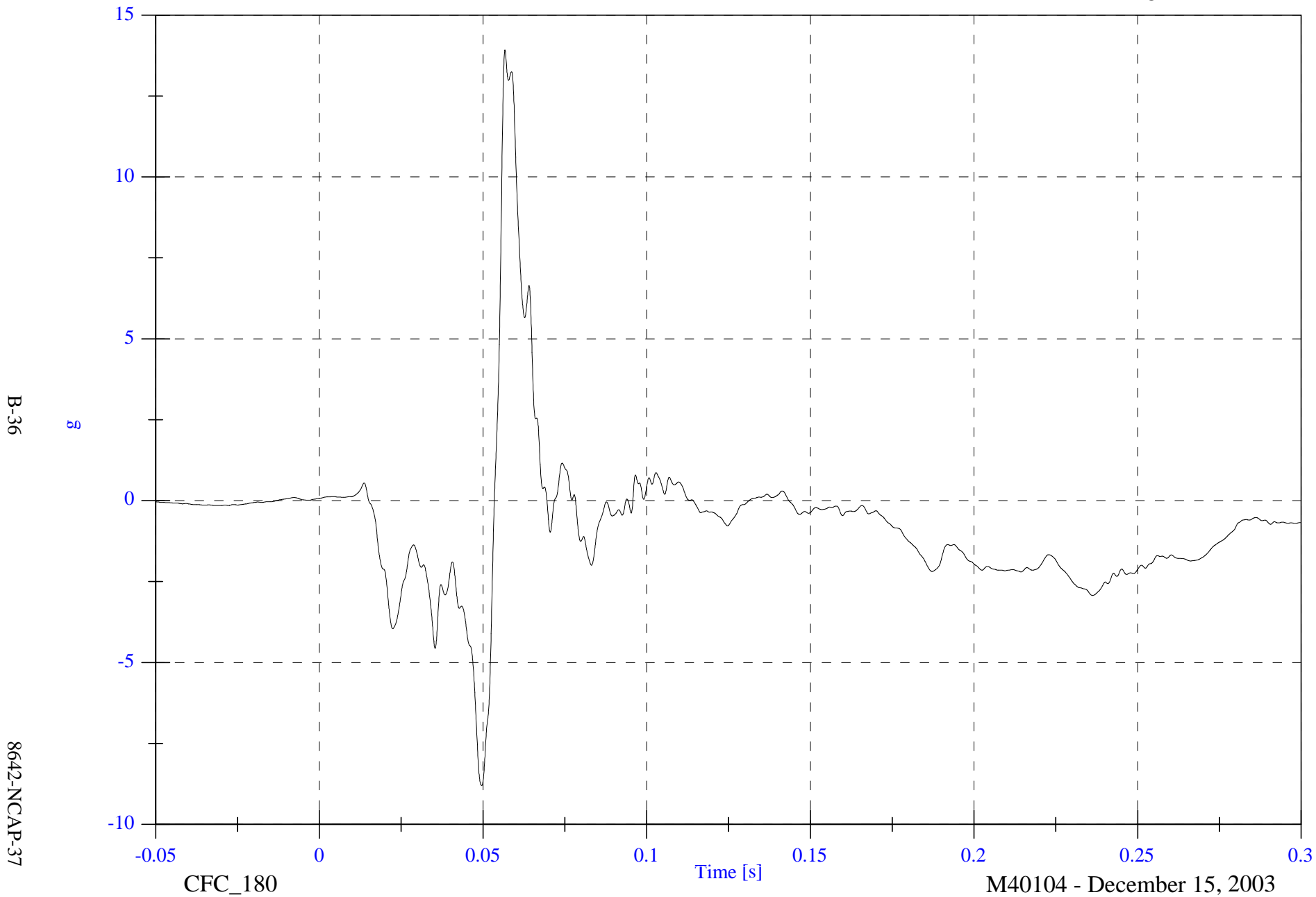


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Chest Red z

Max: 13.9 [g] at 0.057 [s]

Min: -8.8 [g] at 0.050 [s]



B-36

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Chest Red Resultant

Max: 45.6 [g] at 0.058 [s]

Min: 0.1 [g] at -0.050 [s]

B-37

8642-NCAP-37



CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 0.0 [mm] at -0.046 [s]

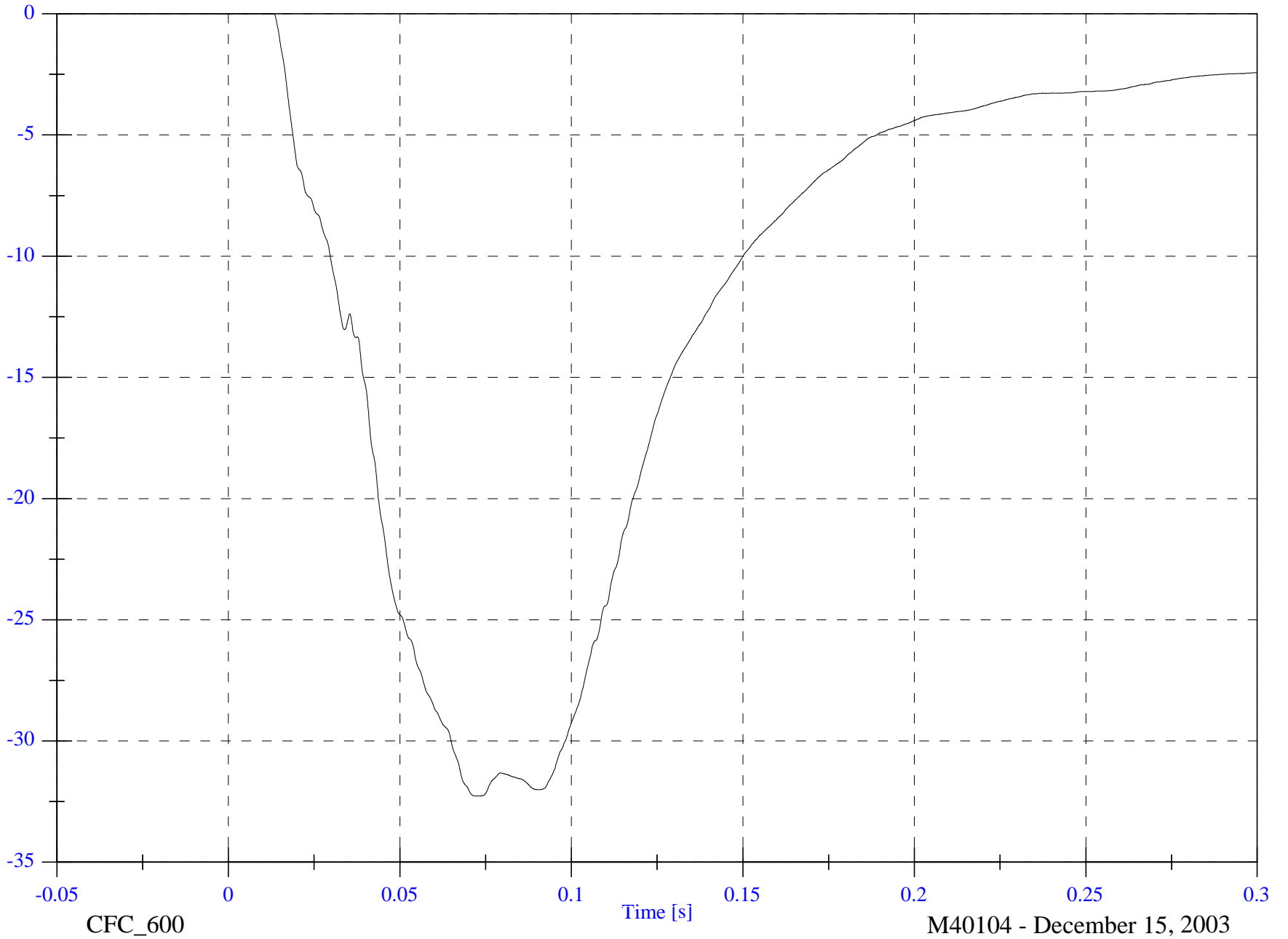
VIP1 Chest Compression x

Min: -32.3 [mm] at 0.074 [s]

B-38

mm

8642-NCAP-37



CFC_600

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

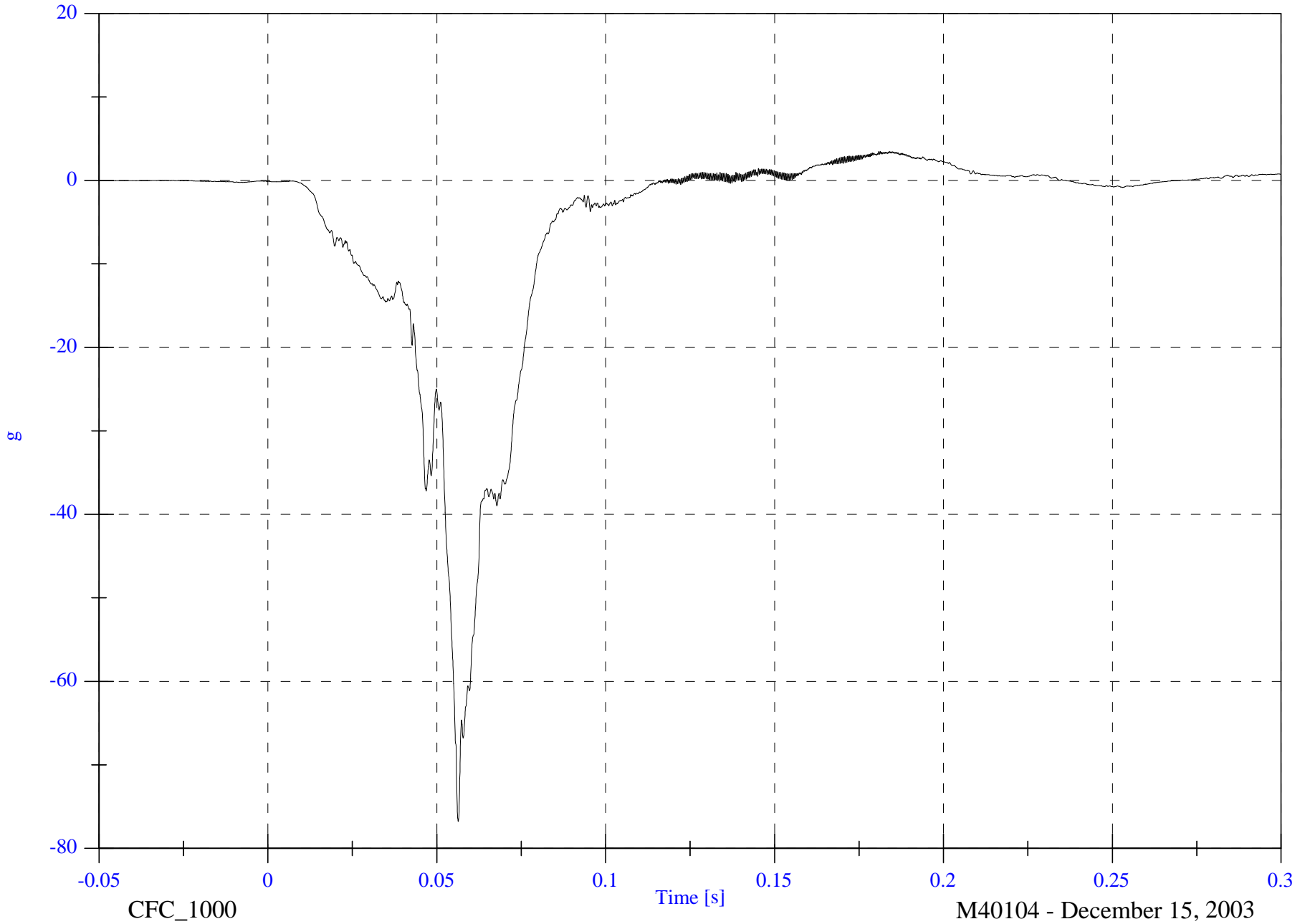
V1P1 Pelvic x

Max: 3.5 [g] at 0.181 [s]

Min: -76.8 [g] at 0.056 [s]

B-39

8642-NCAP-37

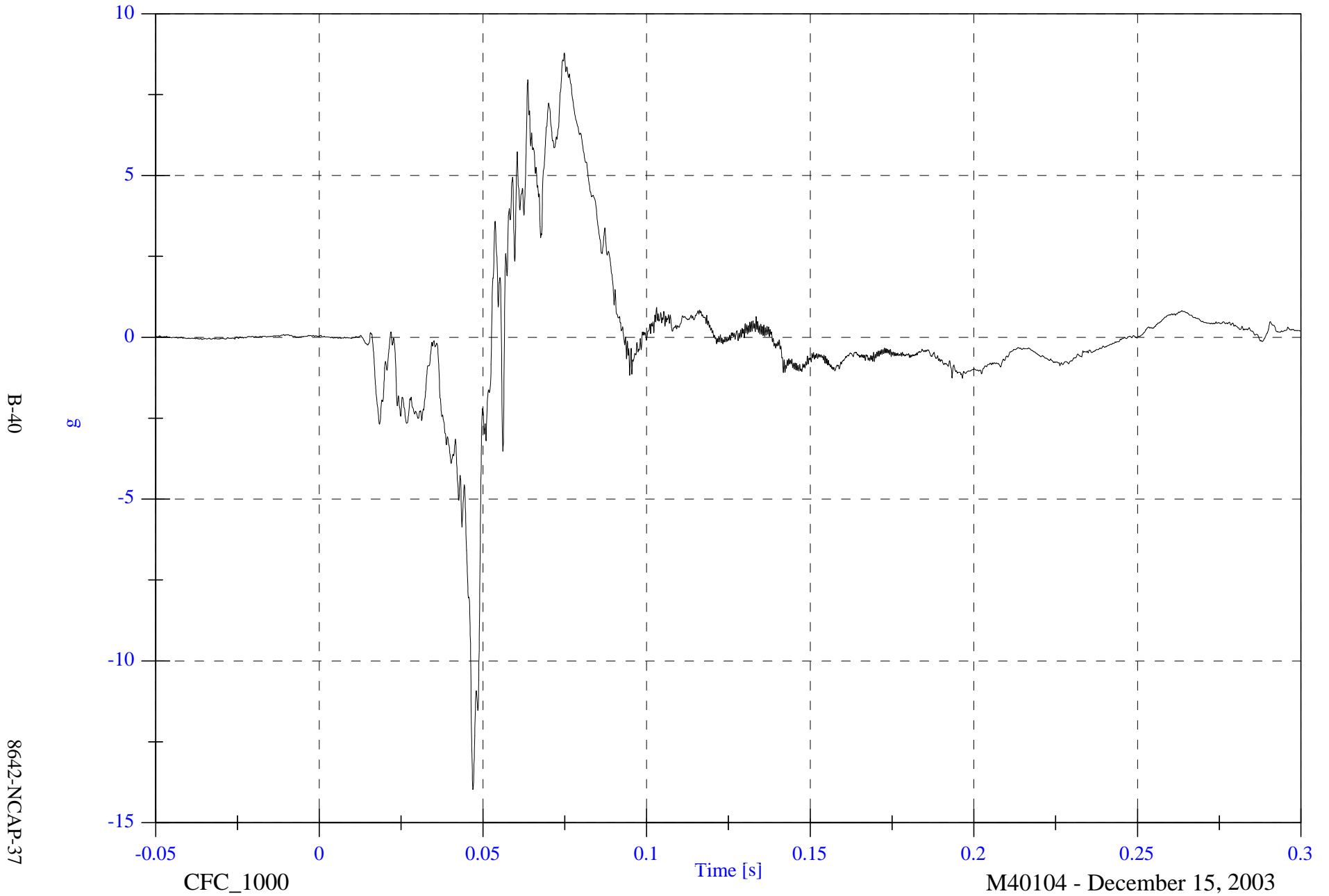


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 8.8 [g] at 0.075 [s]

Min: -14.0 [g] at 0.047 [s]

V1P1 Pelvic y

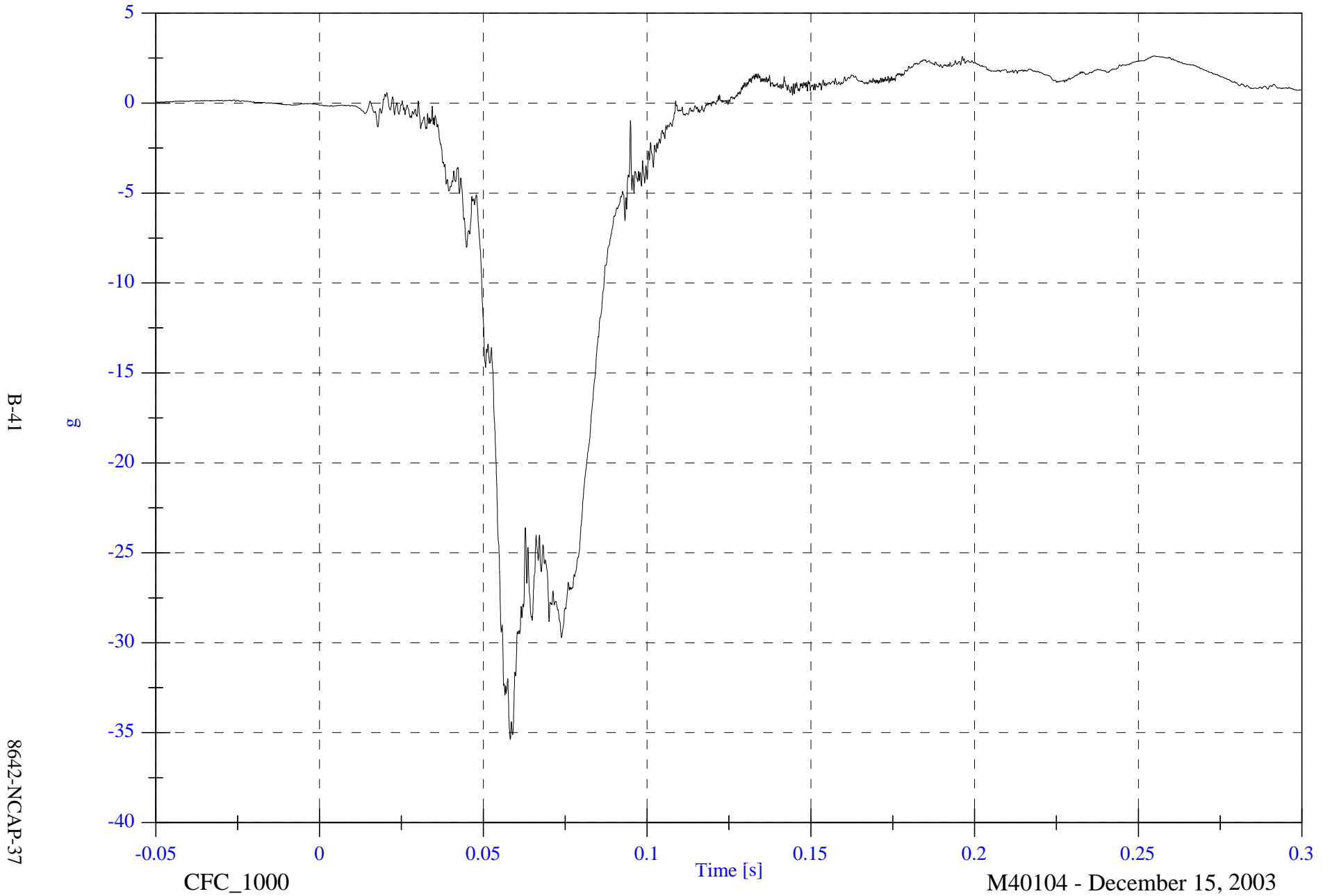


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Pelvic z

Max: 2.6 [g] at 0.255 [s]

Min: -35.4 [g] at 0.058 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

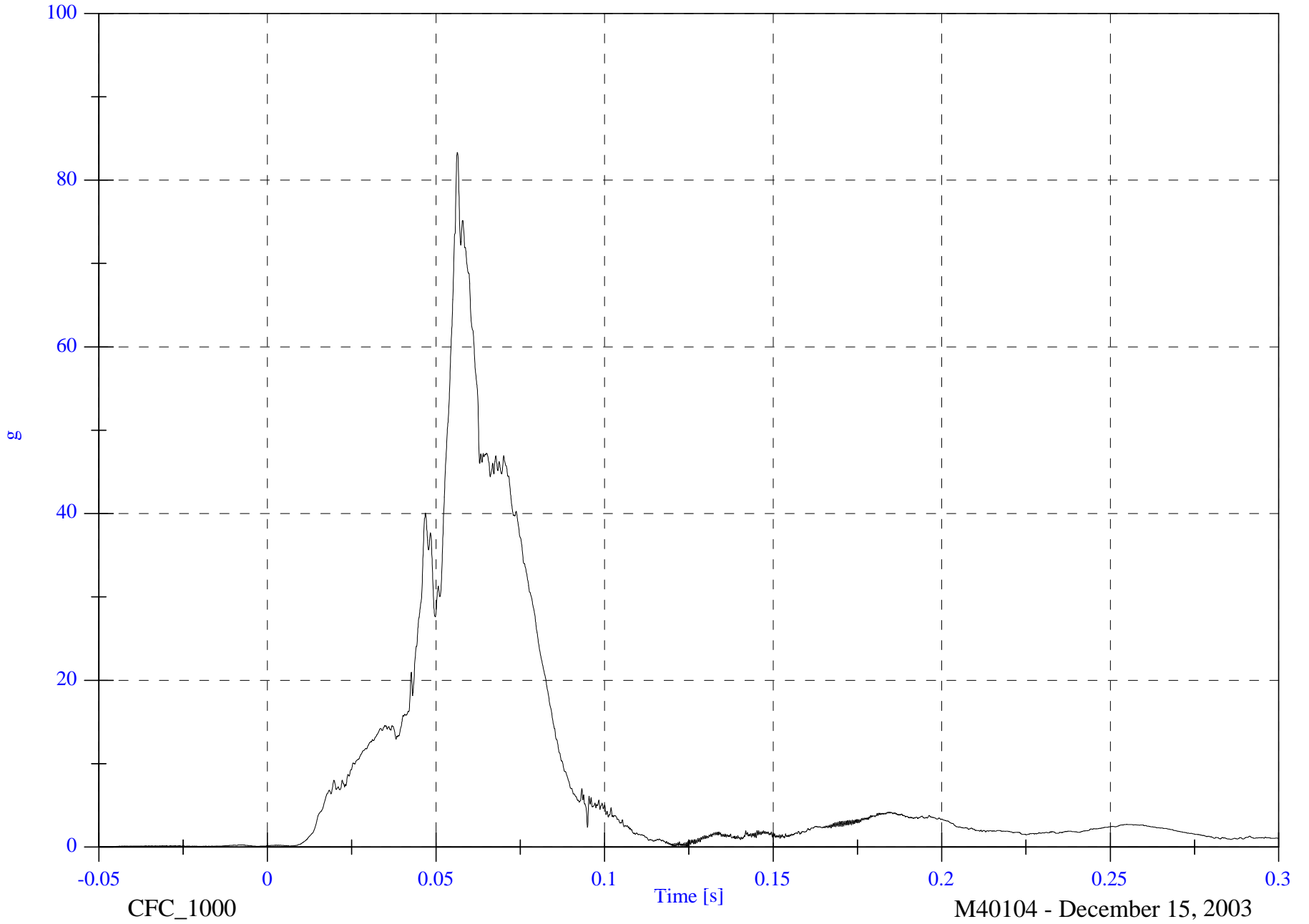
V1P1 Pelvic Resultant

Max: 83.3 [g] at 0.056 [s]

Min: 0.0 [g] at 0.121 [s]

B-42

8642-NCAP-37



CFC_1000

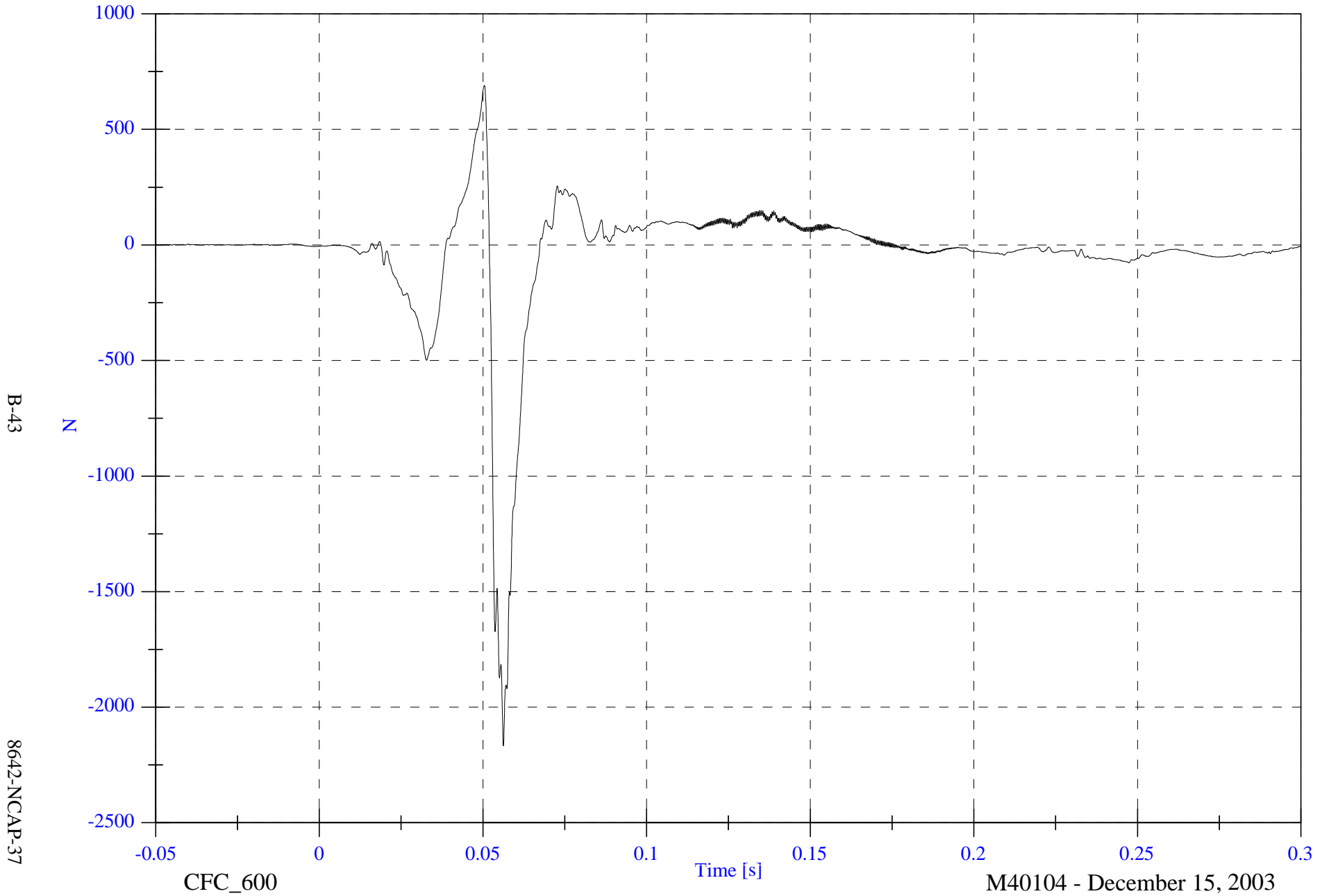
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Left Femur z

Max: 690.2 [N] at 0.050 [s]

Min: -2167.1 [N] at 0.056 [s]

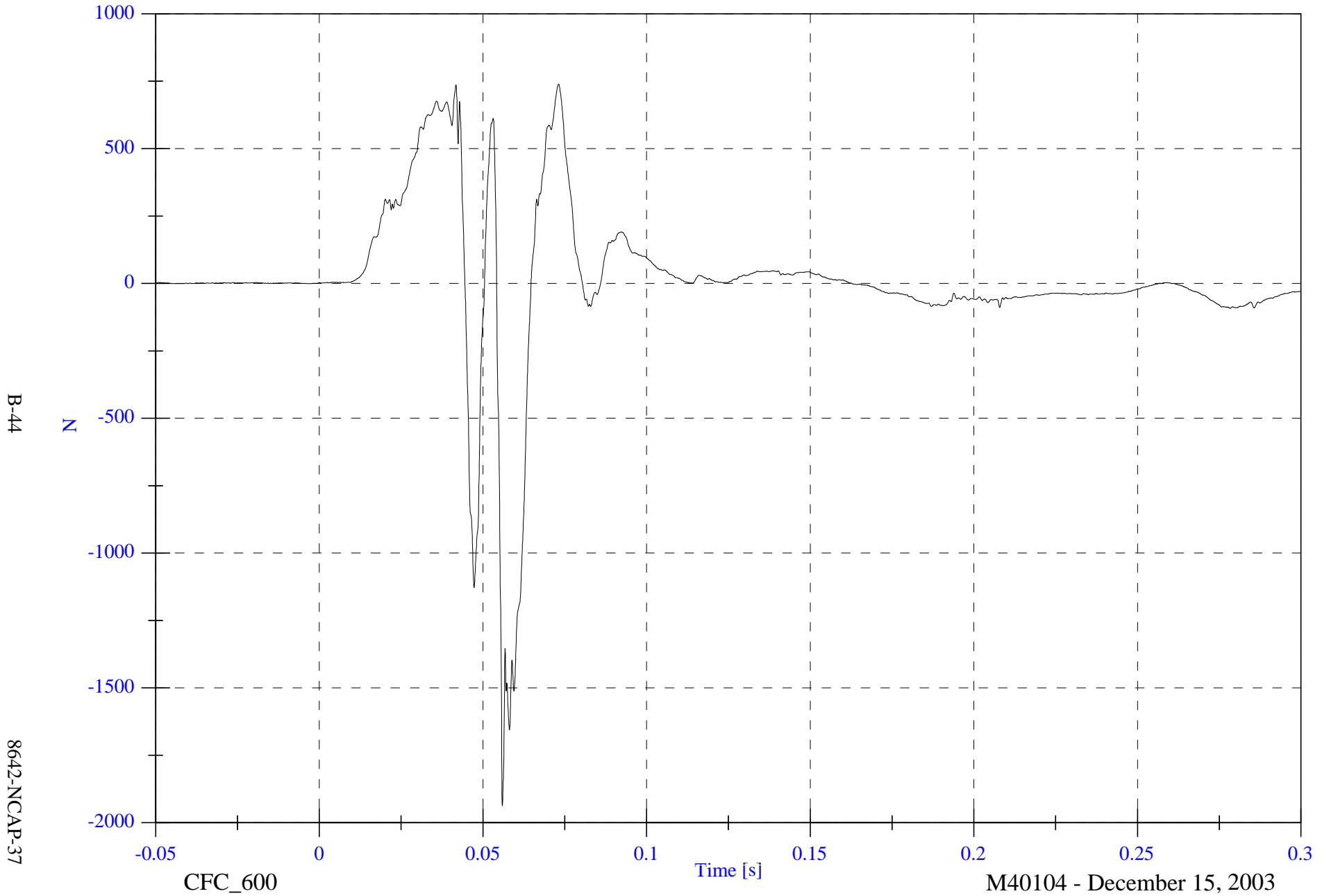


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 739.9 [N] at 0.073 [s]

Min: -1937.3 [N] at 0.056 [s]

V1P1 Right Femur z



B-44

8642-NCAP-37

CFC_600

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

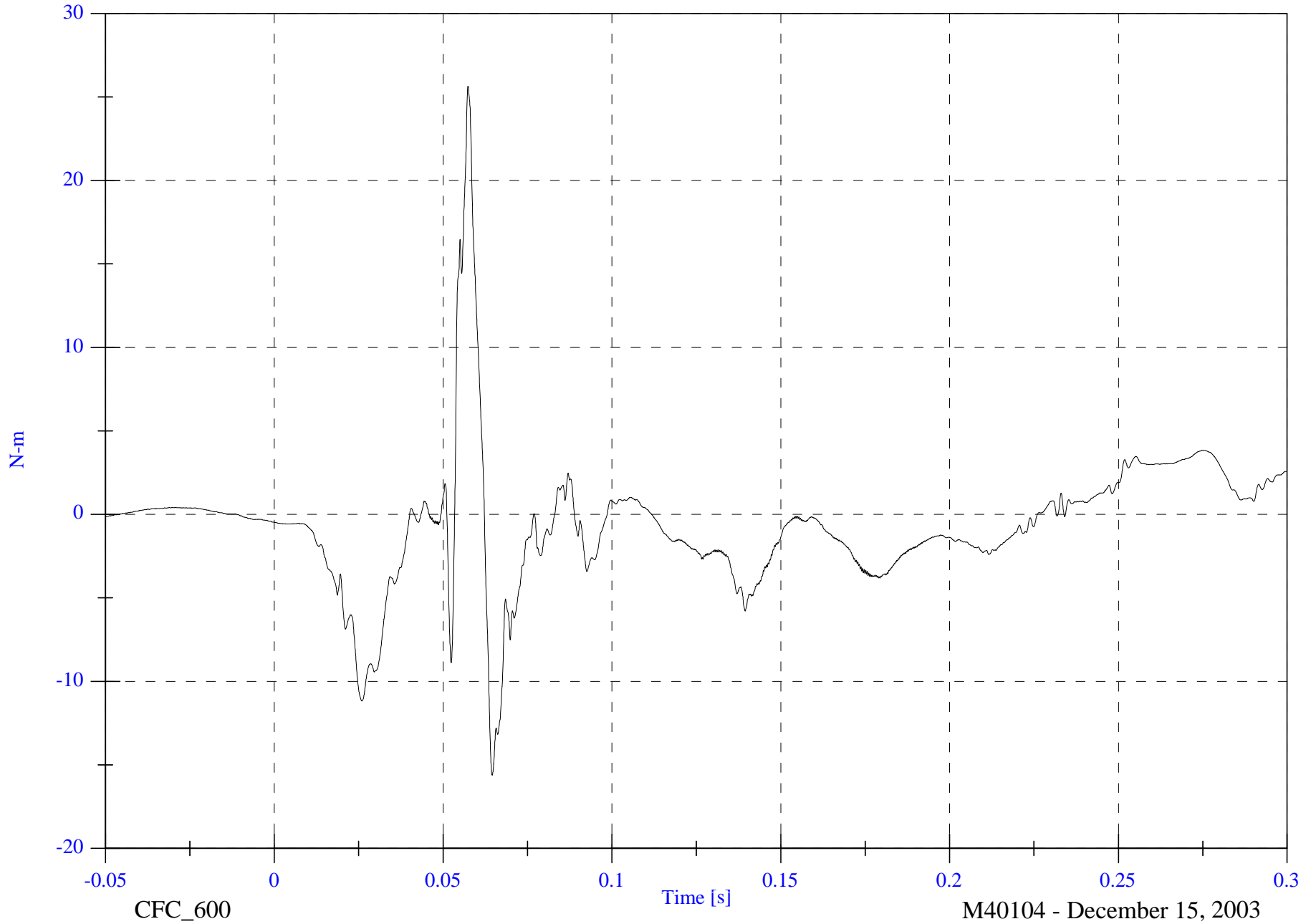
V1P1 Left Upper Tibia Mx

Max: 25.7 [N-m] at 0.057 [s]

Min: -15.6 [N-m] at 0.065 [s]

B-45

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

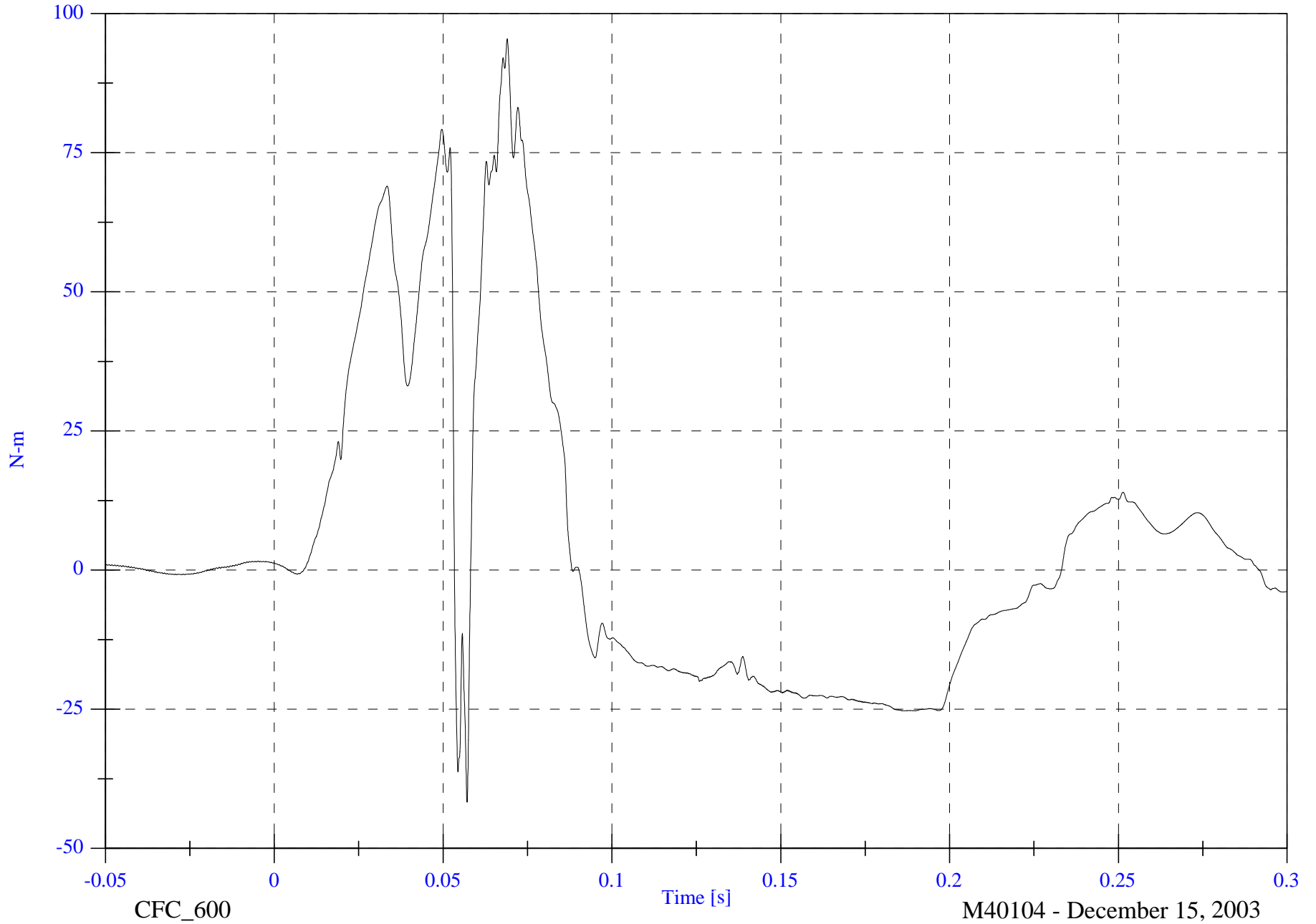
V1P1 Left Upper Tibia My

Max: 95.5 [N-m] at 0.069 [s]

Min: -41.7 [N-m] at 0.057 [s]

B-46

8642-NCAP-37



CFC_600

Time [s]

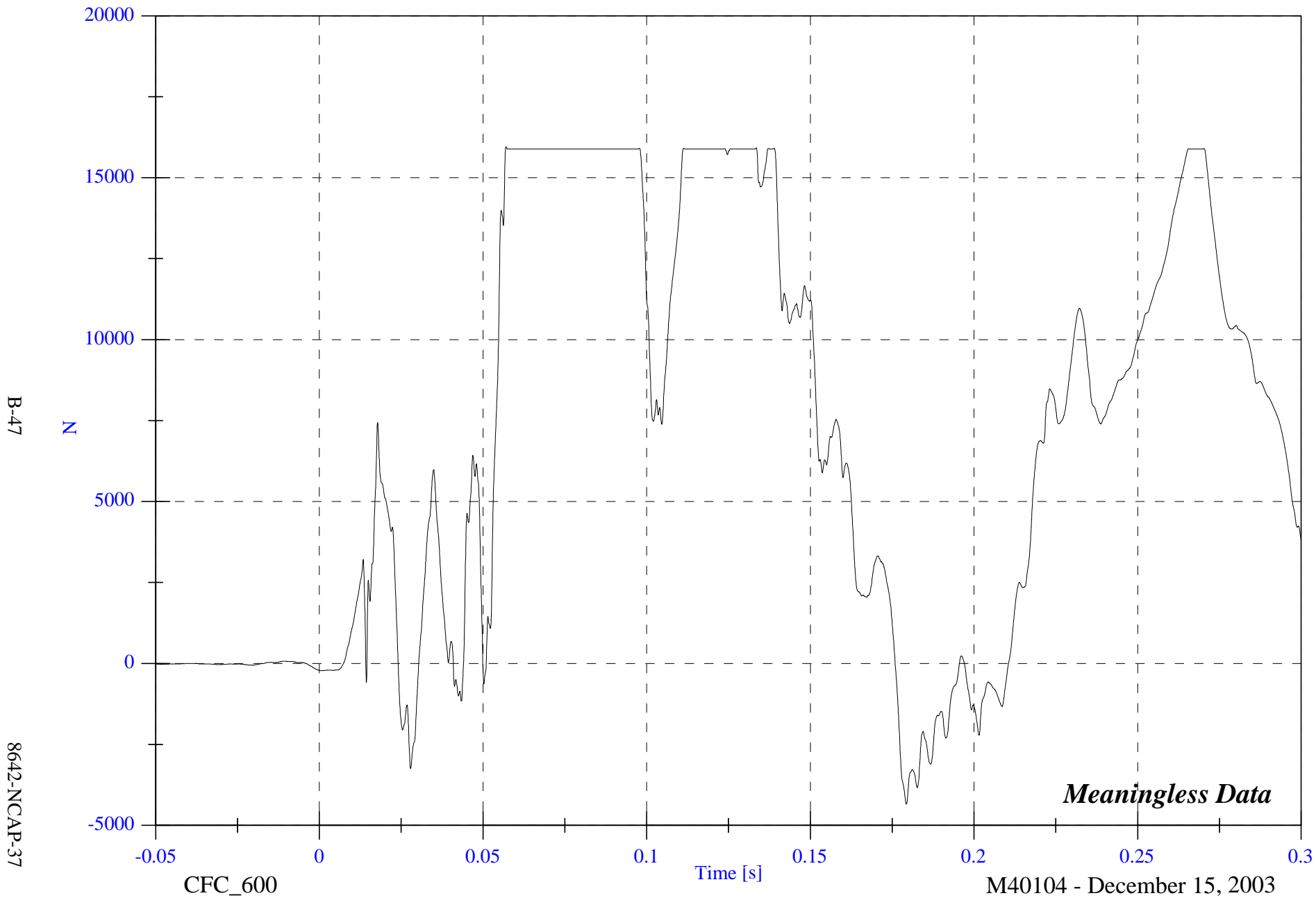
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Left Lower Tibia Fz

Max: 15961.8 [N] at 0.057 [s]

Min: -4345.9 [N] at 0.179 [s]



B-47

8642-NCAP-37

CFC_600

Time [s]

M40104 - December 15, 2003

Meaningless Data

2004 NCAP Test 1 2004 Chevrolet Malibu

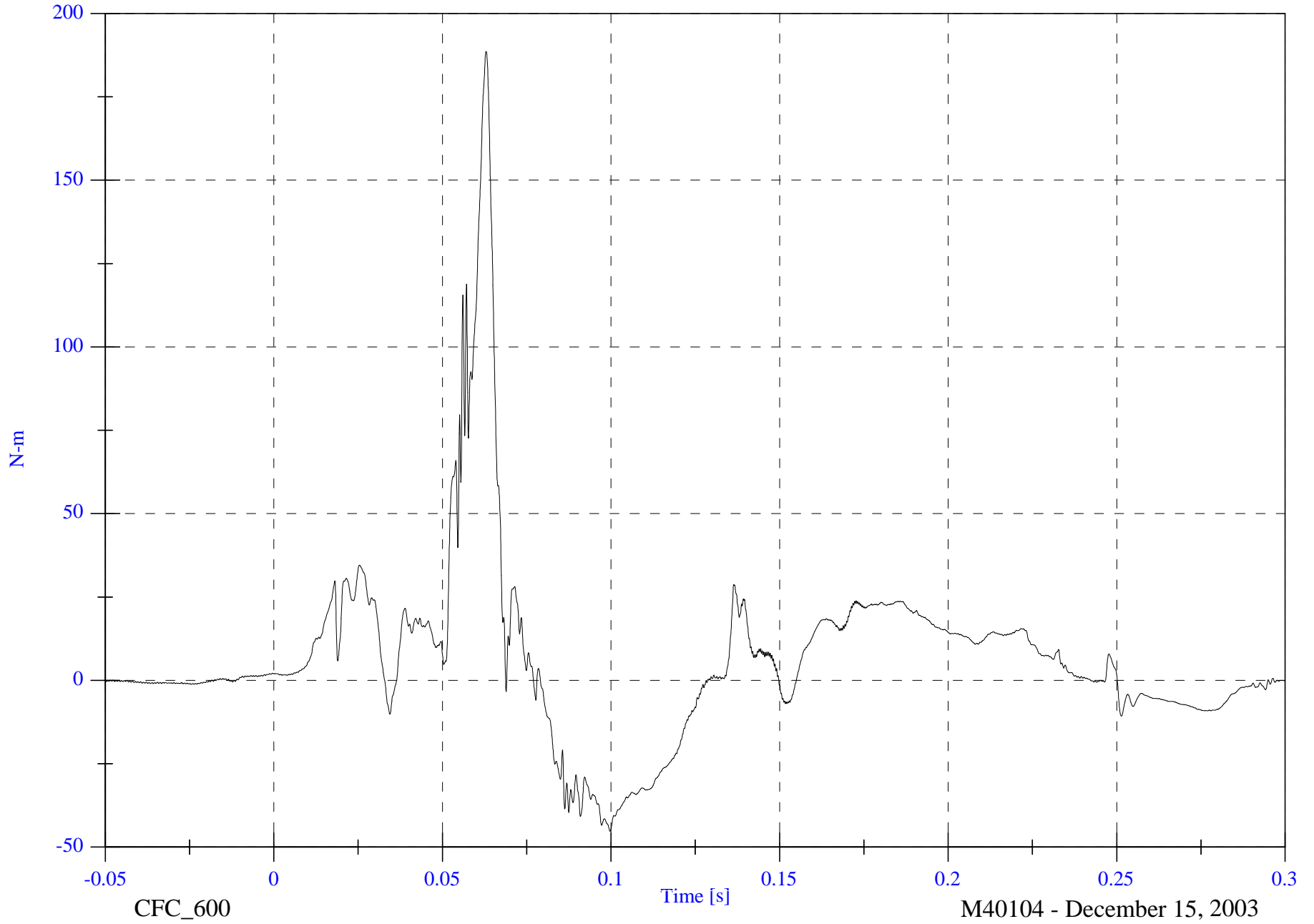
VIP1 Left Lower Tibia Mx

Max: 188.6 [N-m] at 0.063 [s]

Min: -45.3 [N-m] at 0.100 [s]

B-48

8642-NCAP-37



CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

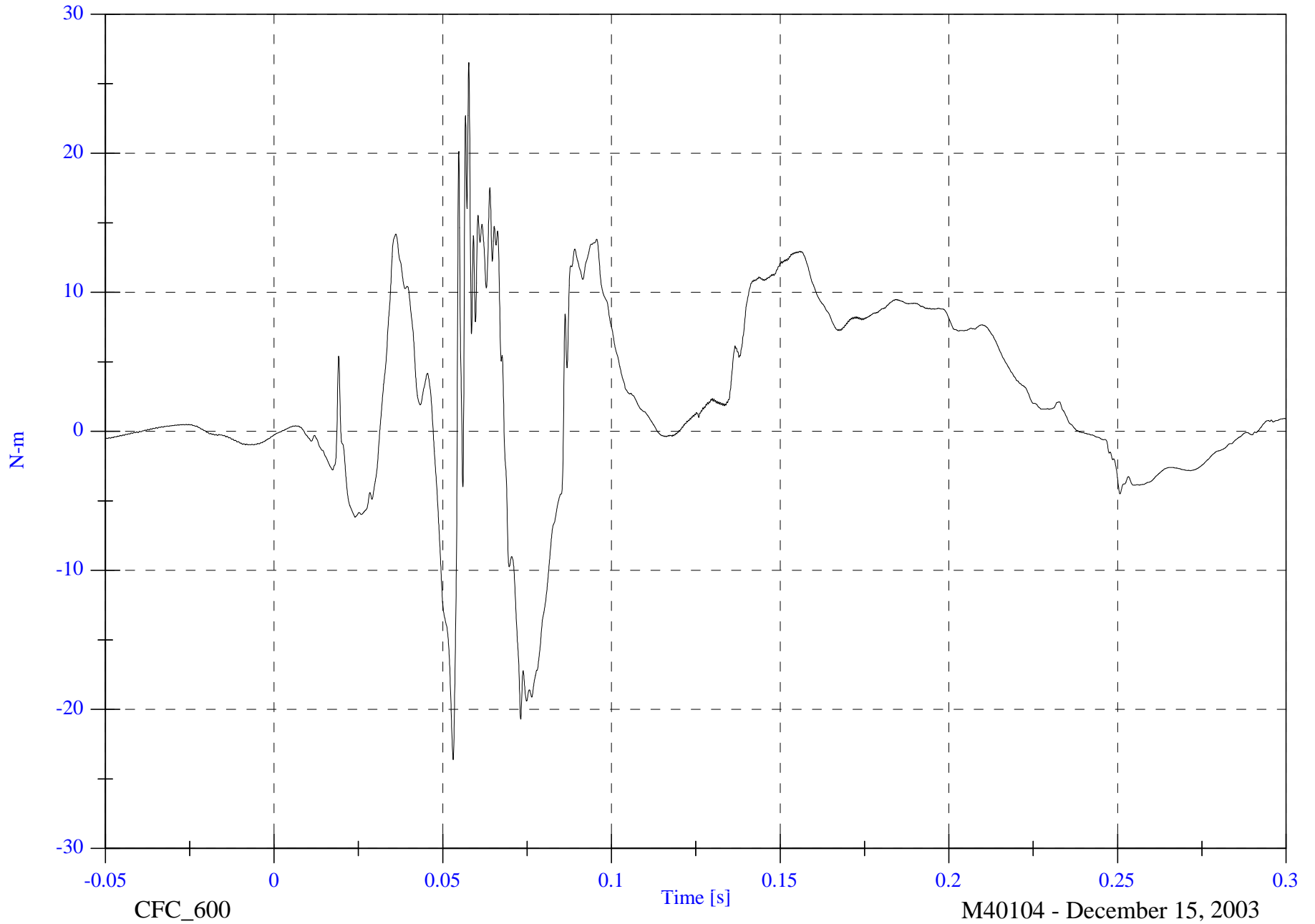
VIP1 Left Lower Tibia My

Max: 26.5 [N-m] at 0.058 [s]

Min: -23.6 [N-m] at 0.053 [s]

B-49

8642-NCAP-37



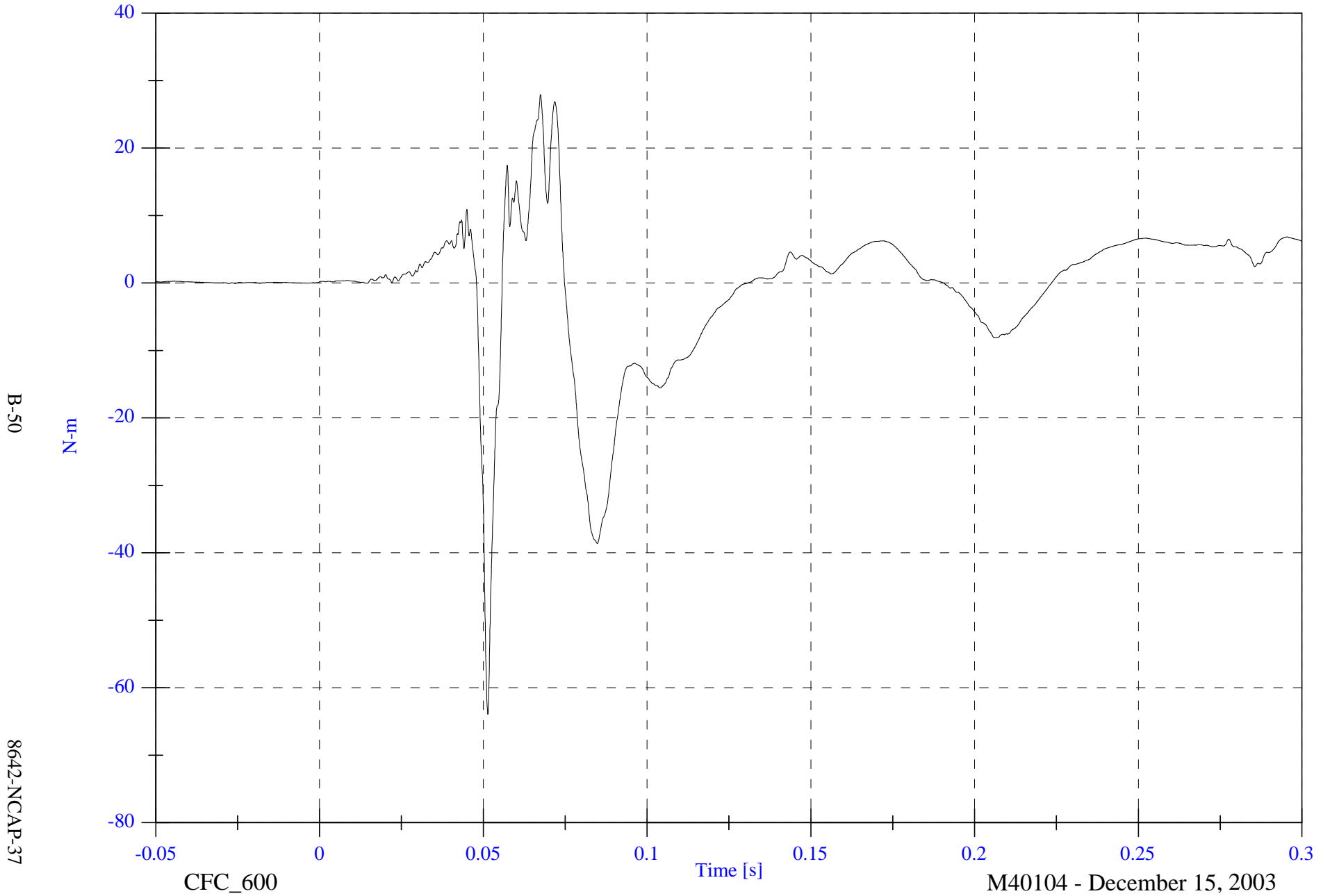
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 27.9 [N-m] at 0.068 [s]

Min: -63.9 [N-m] at 0.051 [s]

VIP1 Right Upper Tibia Mx



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8642-NCAP-37

CFC_600

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

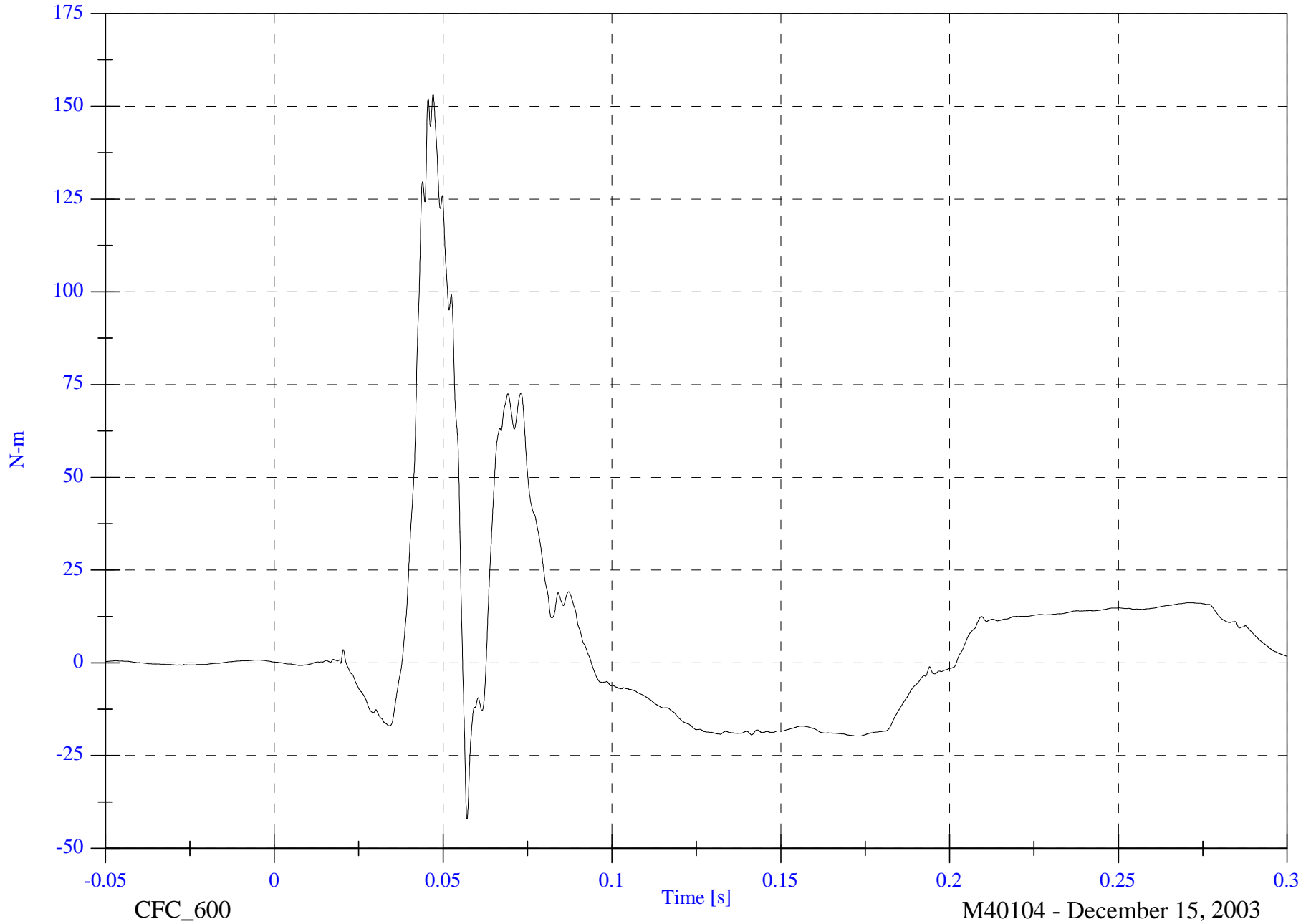
V1P1 Right Upper Tibia My

Max: 153.3 [N-m] at 0.047 [s]

Min: -42.1 [N-m] at 0.057 [s]

B-51

8642-NCAP-37

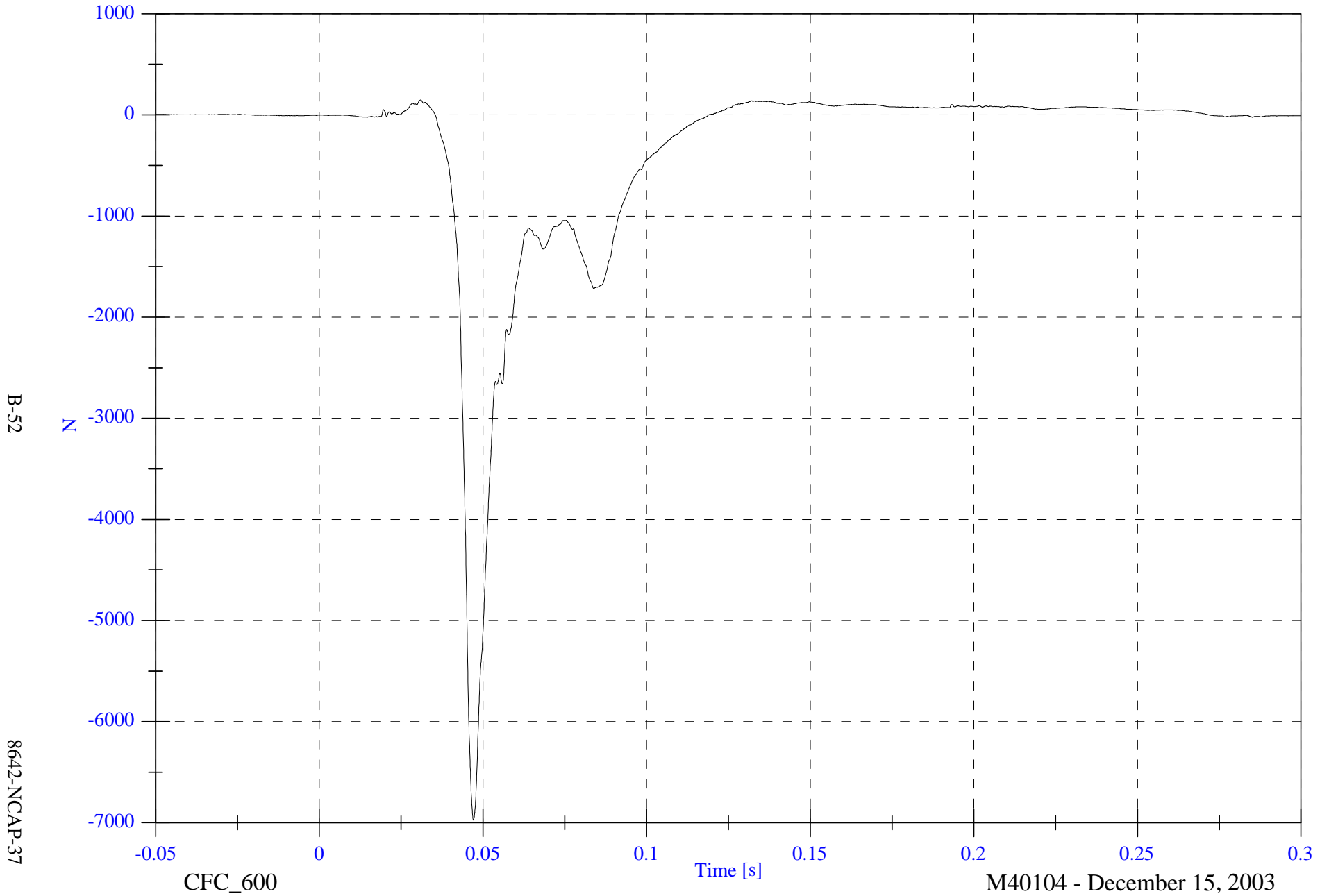


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Right Lower Tibia Fz

Max: 146.9 [N] at 0.031 [s]

Min: -6974.6 [N] at 0.047 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

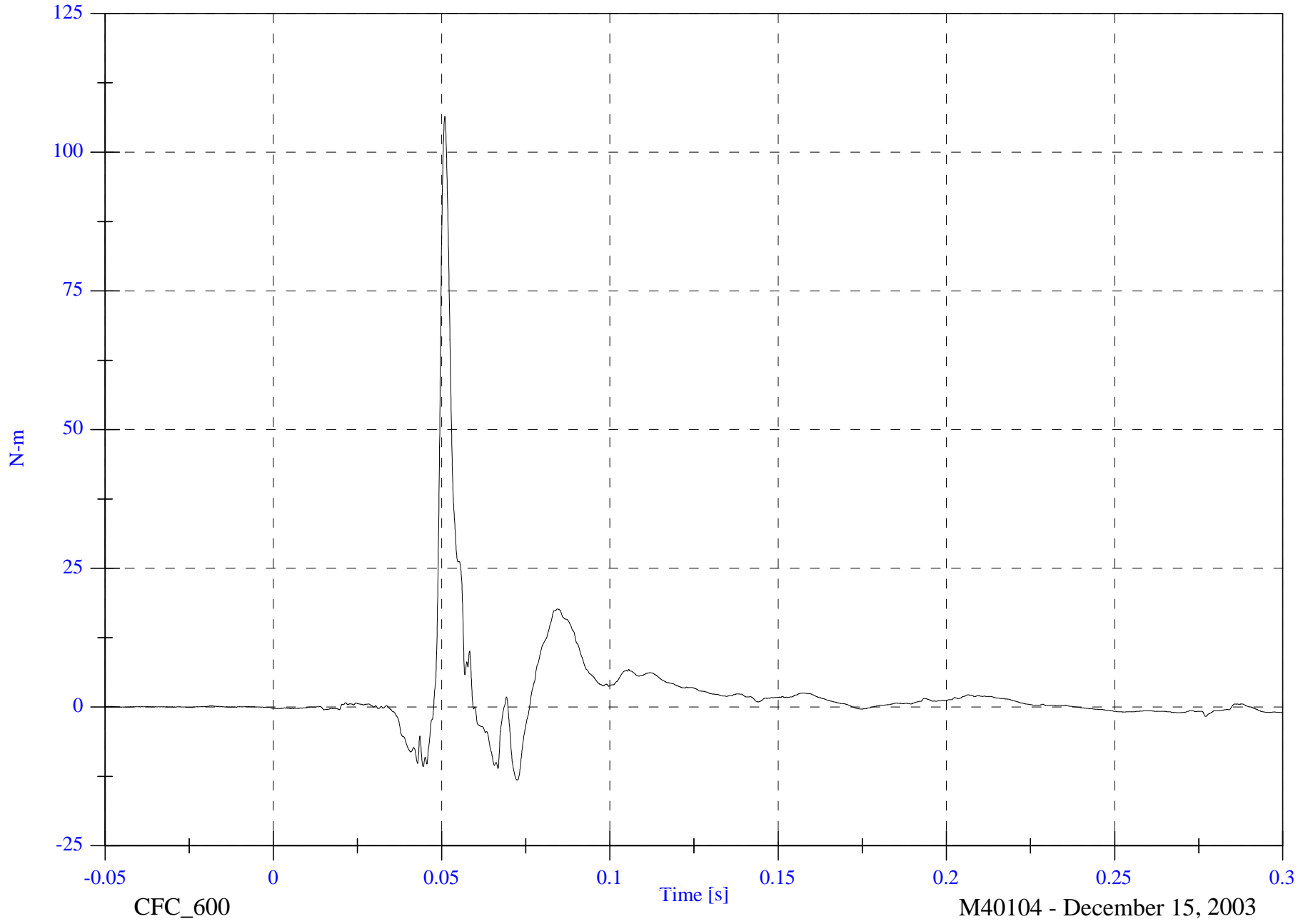
Max: 106.5 [N-m] at 0.051 [s]

V1P1 Right Lower Tibia Mx

Min: -13.1 [N-m] at 0.073 [s]

B-53

8642-NCAP-37



CFC_600

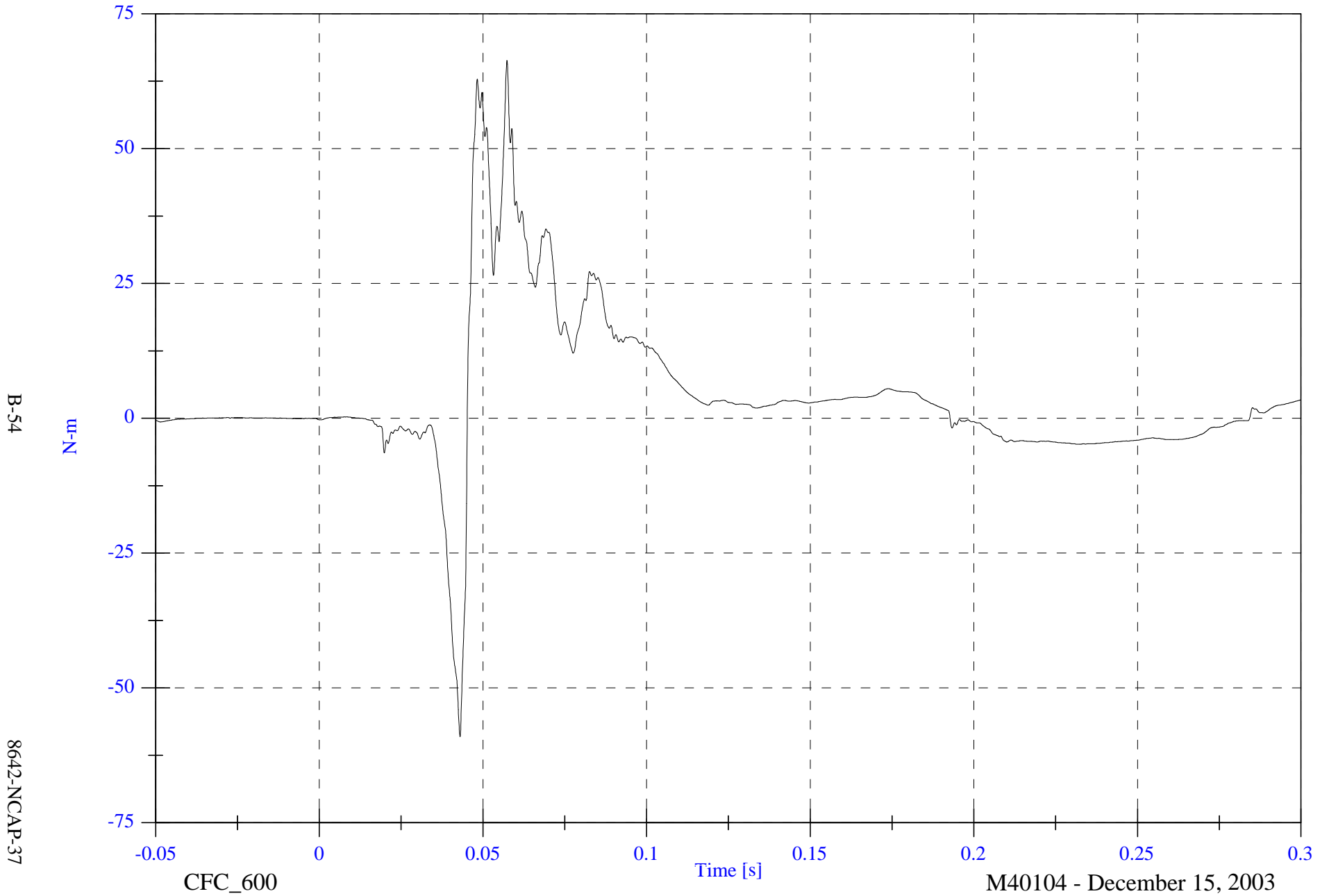
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 66.3 [N-m] at 0.057 [s]

V1P1 Right Lower Tibia My

Min: -59.0 [N-m] at 0.043 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 0.2 [g] at 0.048 [s]

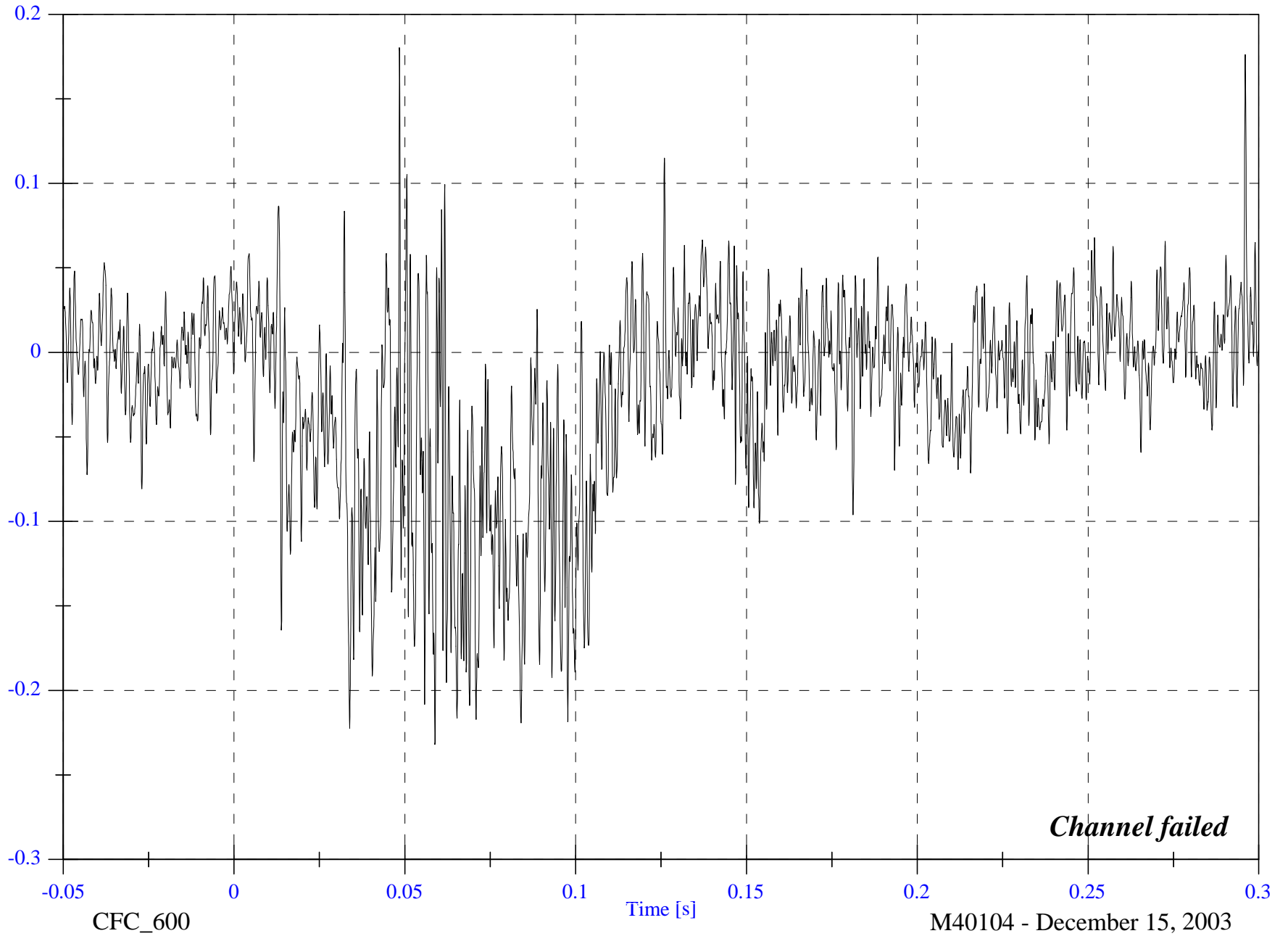
Min: -0.2 [g] at 0.059 [s]

V1P1 Left Foot Aft x

B-55

g

8642-NCAP-37

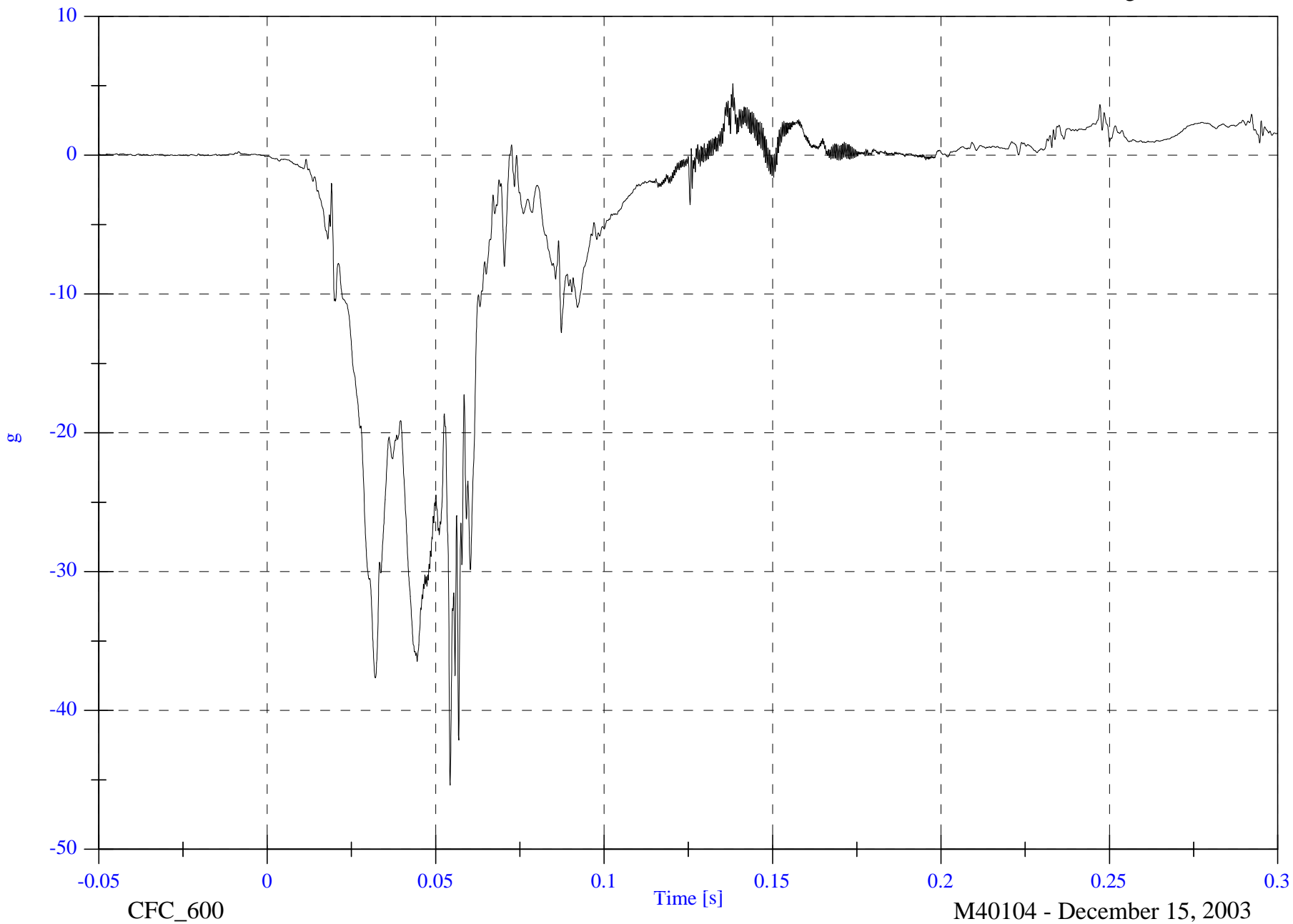


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 5.1 [g] at 0.138 [s]

Min: -45.4 [g] at 0.054 [s]

V1P1 Left Foot Aft z



B-56

8642-NCAP-37

CFC_600

Time [s]

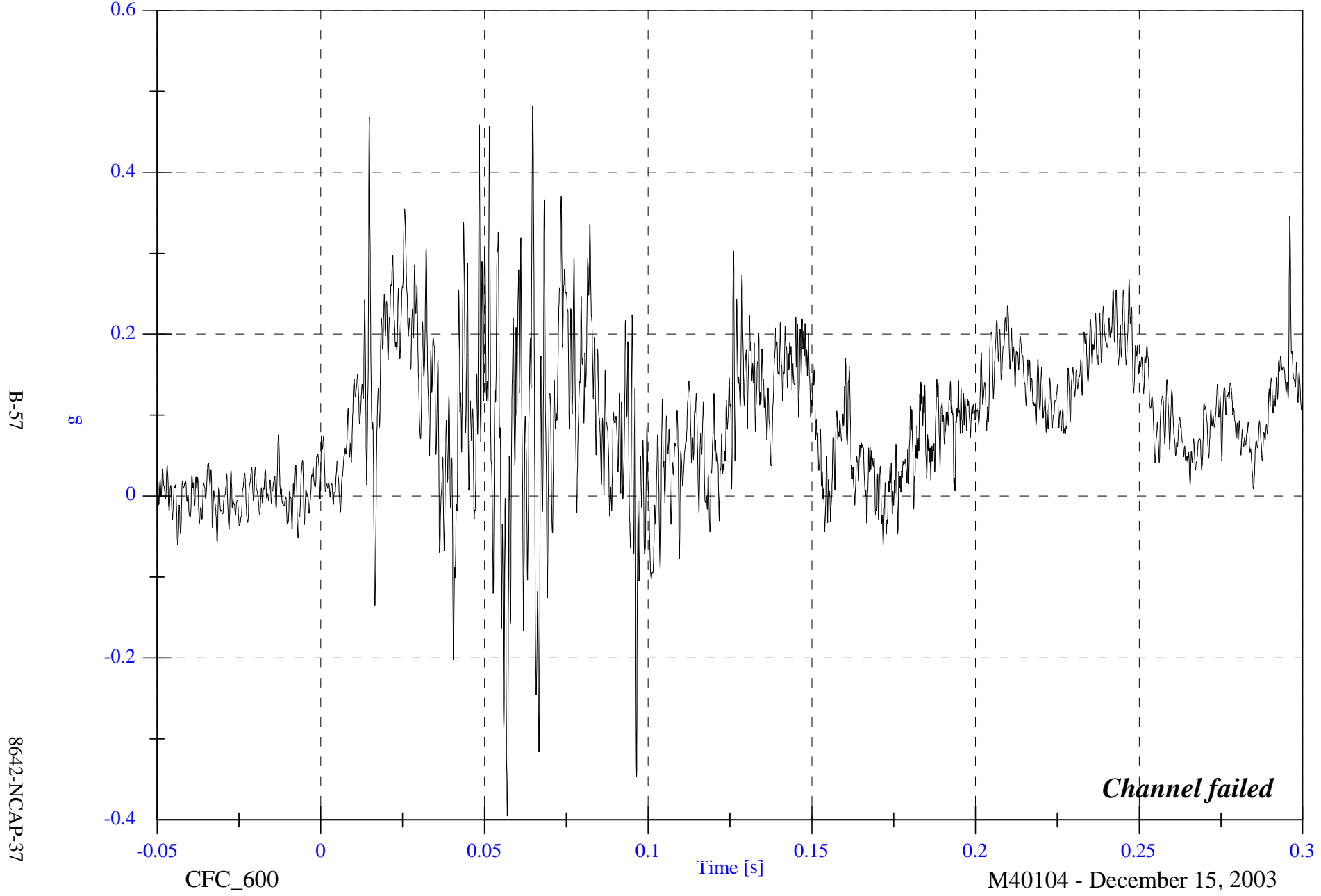
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 0.5 [g] at 0.065 [s]

Min: -0.4 [g] at 0.057 [s]

V1P1 Left Foot Fore z



B-57

8642-NCAP-37

CFC_600

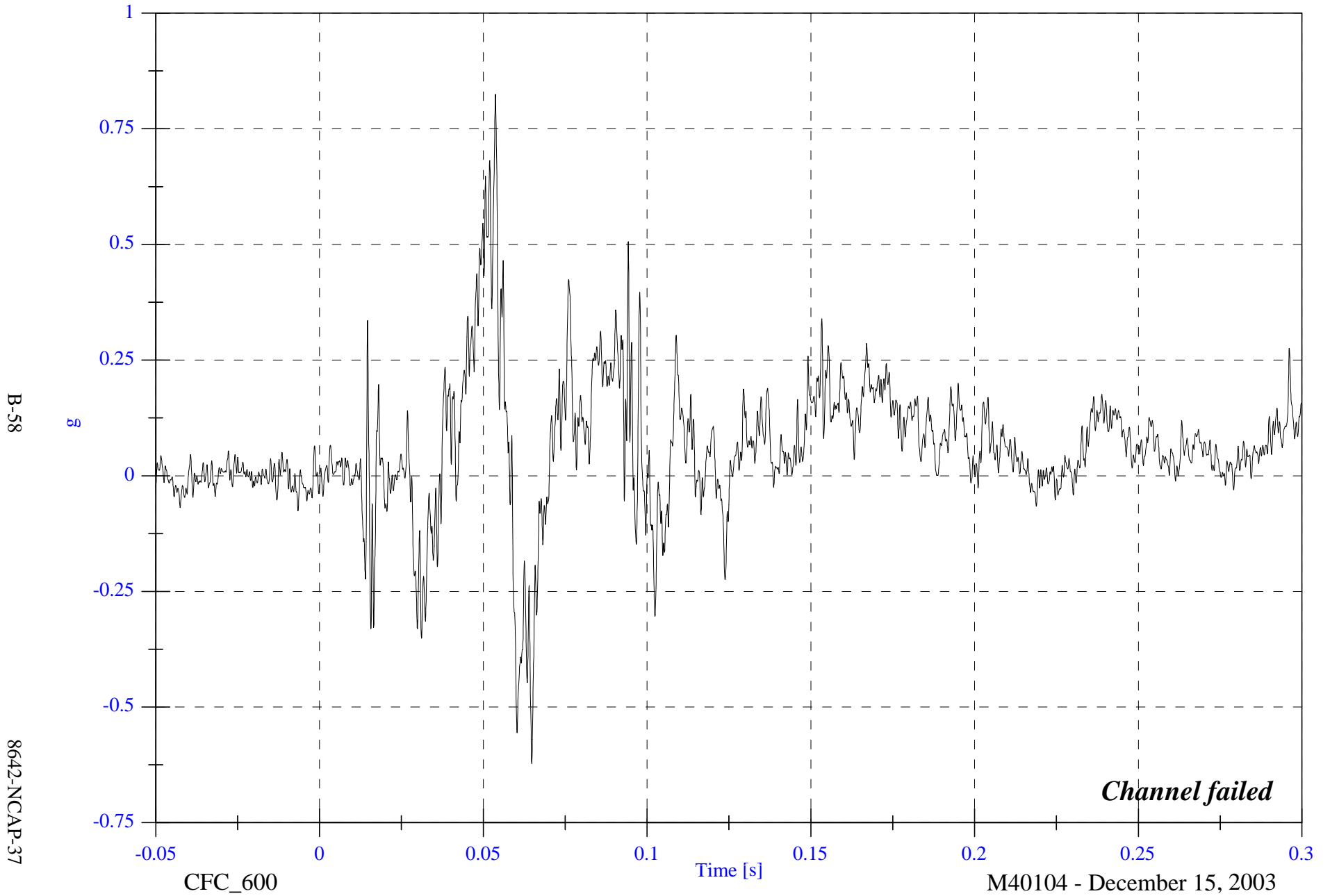
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP1 Right Foot Aft x

Max: 0.8 [g] at 0.054 [s]

Min: -0.6 [g] at 0.065 [s]

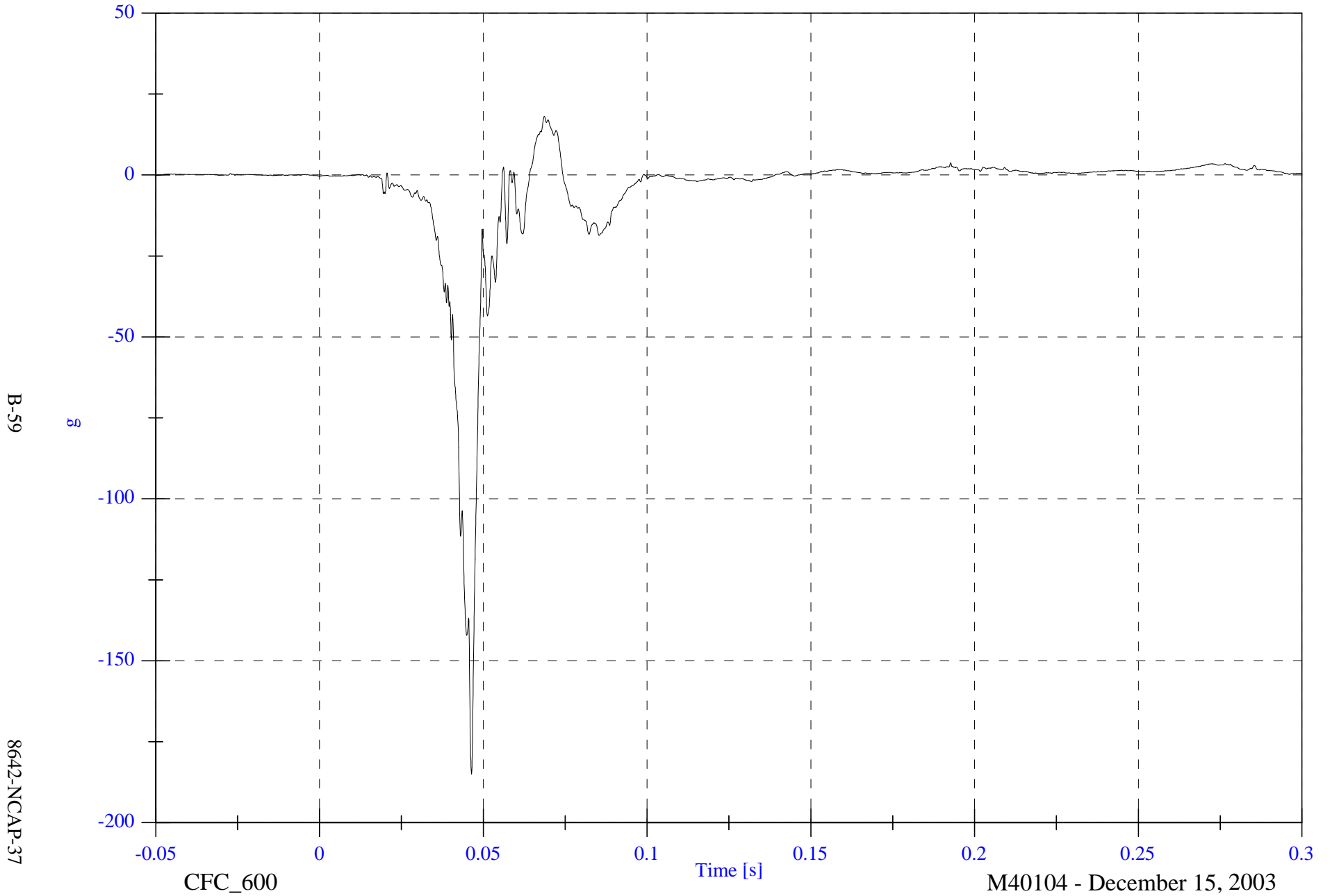


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Right Foot Aft z

Max: 18.1 [g] at 0.069 [s]

Min: -185.0 [g] at 0.046 [s]

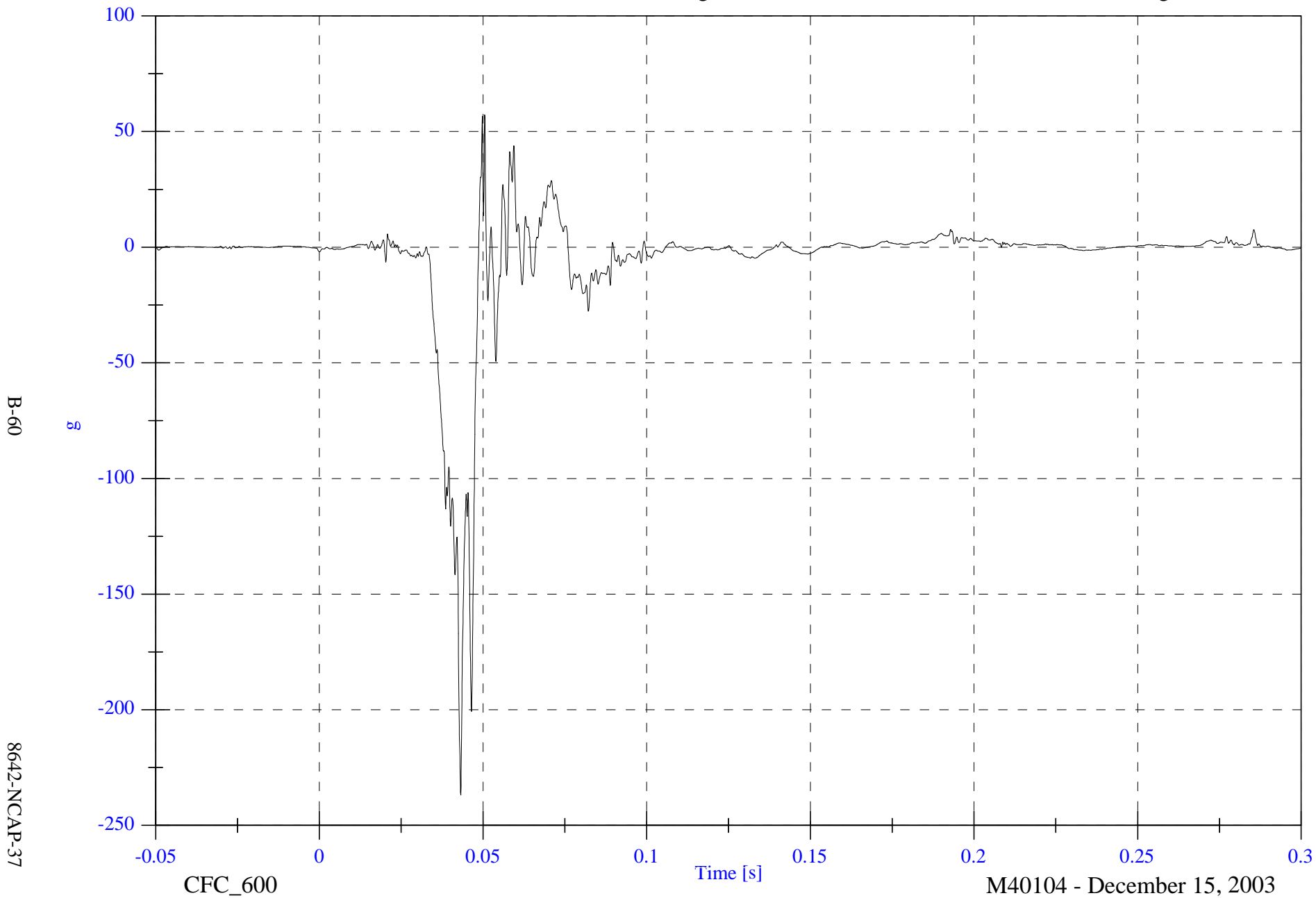


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 57.2 [g] at 0.051 [s]

Min: -236.9 [g] at 0.043 [s]

V1P1 Right Foot Fore z

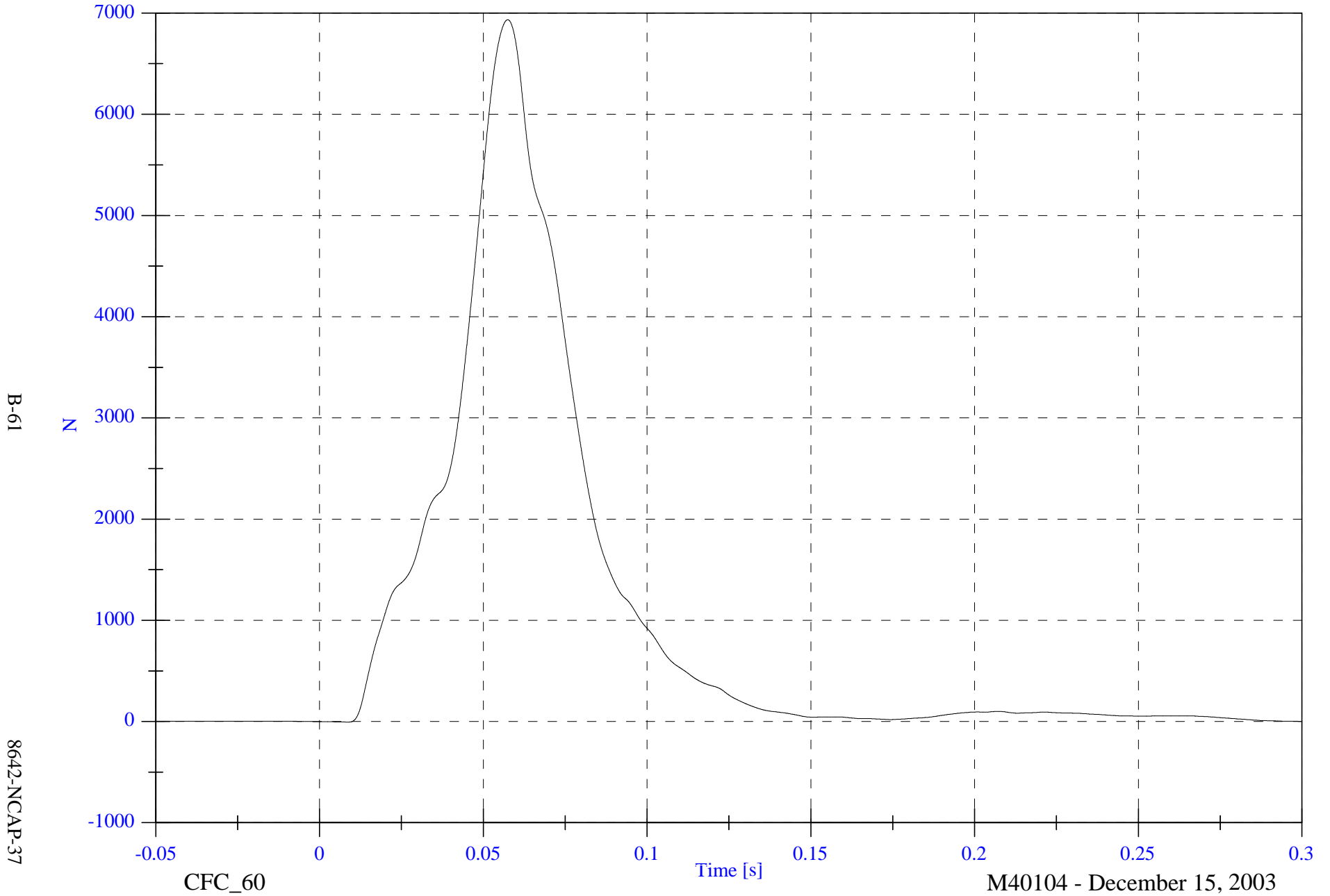


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P1 Lap Belt

Max: 6934.6 [N] at 0.057 [s]

Min: -6.7 [N] at 0.009 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

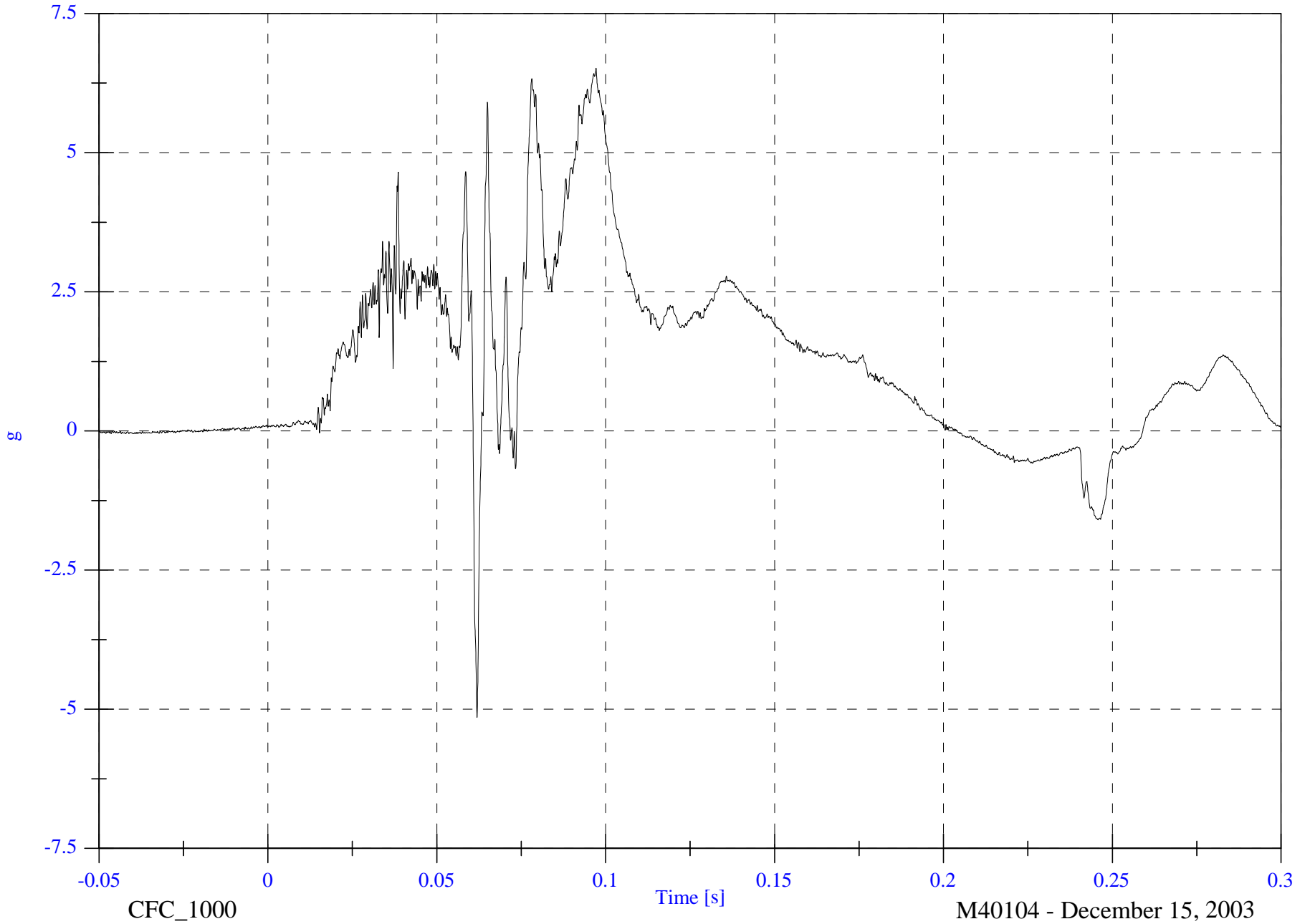
V1P2 Head 9 Array X Arm Ay

Max: 6.5 [g] at 0.097 [s]

Min: -5.1 [g] at 0.062 [s]

B-62

8642-NCAP-37

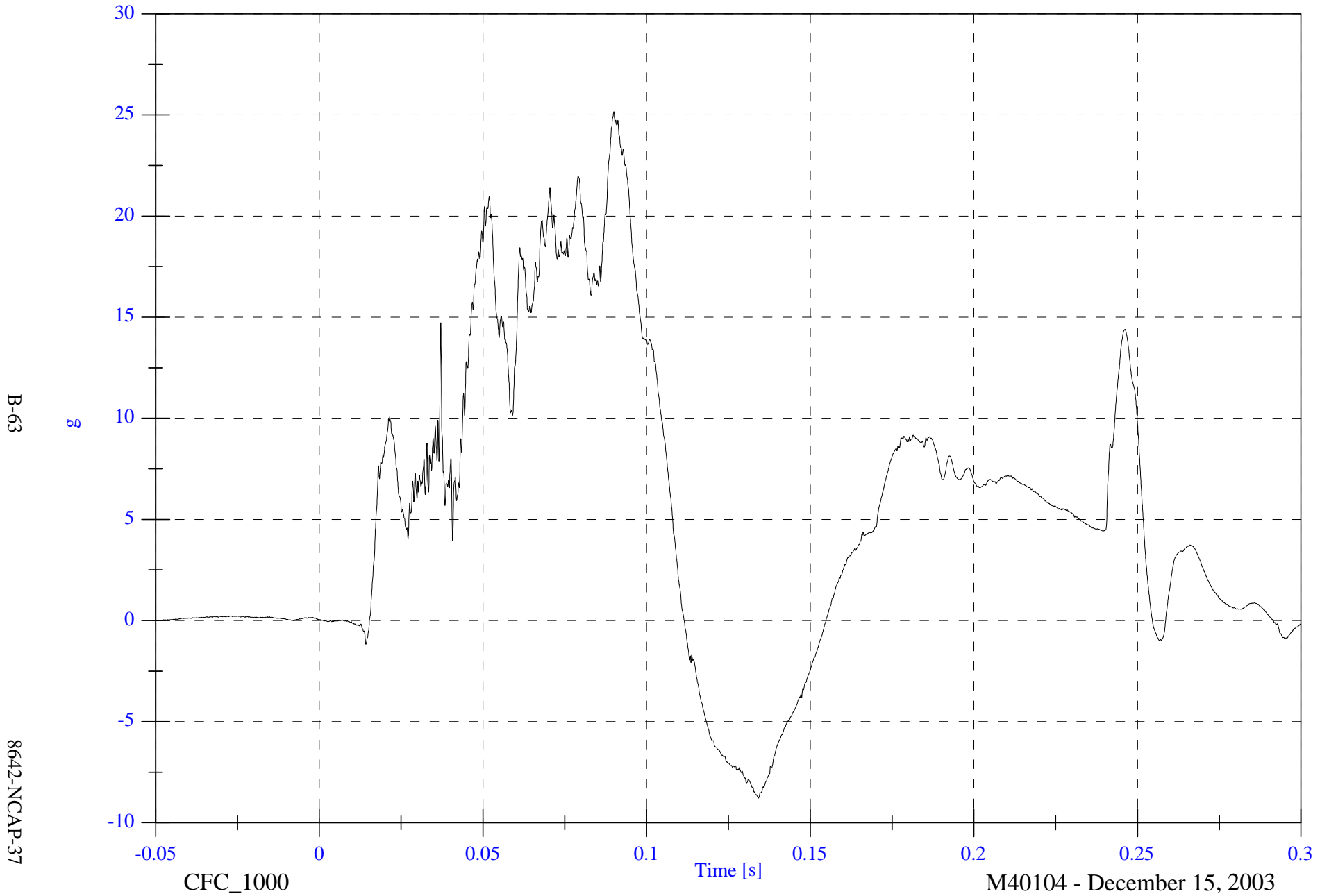


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP2 Head 9 Array X Arm Az

Max: 25.2 [g] at 0.090 [s]

Min: -8.8 [g] at 0.134 [s]



B-63

8642-NCAP-37

CFC_1000

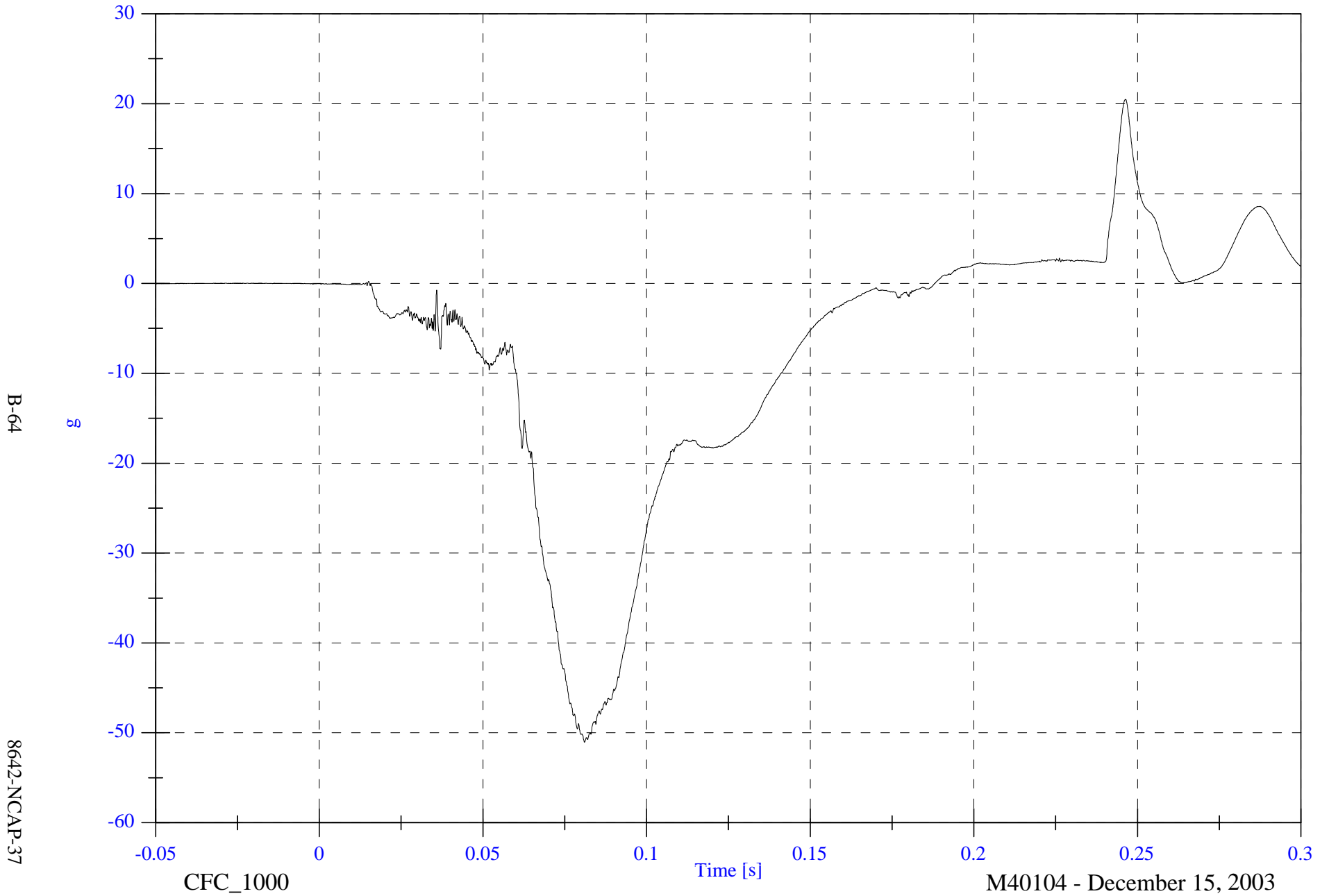
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Head 9 Array Y Arm Ax

Max: 20.5 [g] at 0.246 [s]

Min: -51.1 [g] at 0.081 [s]



B-64

8642-NCAP-37

CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

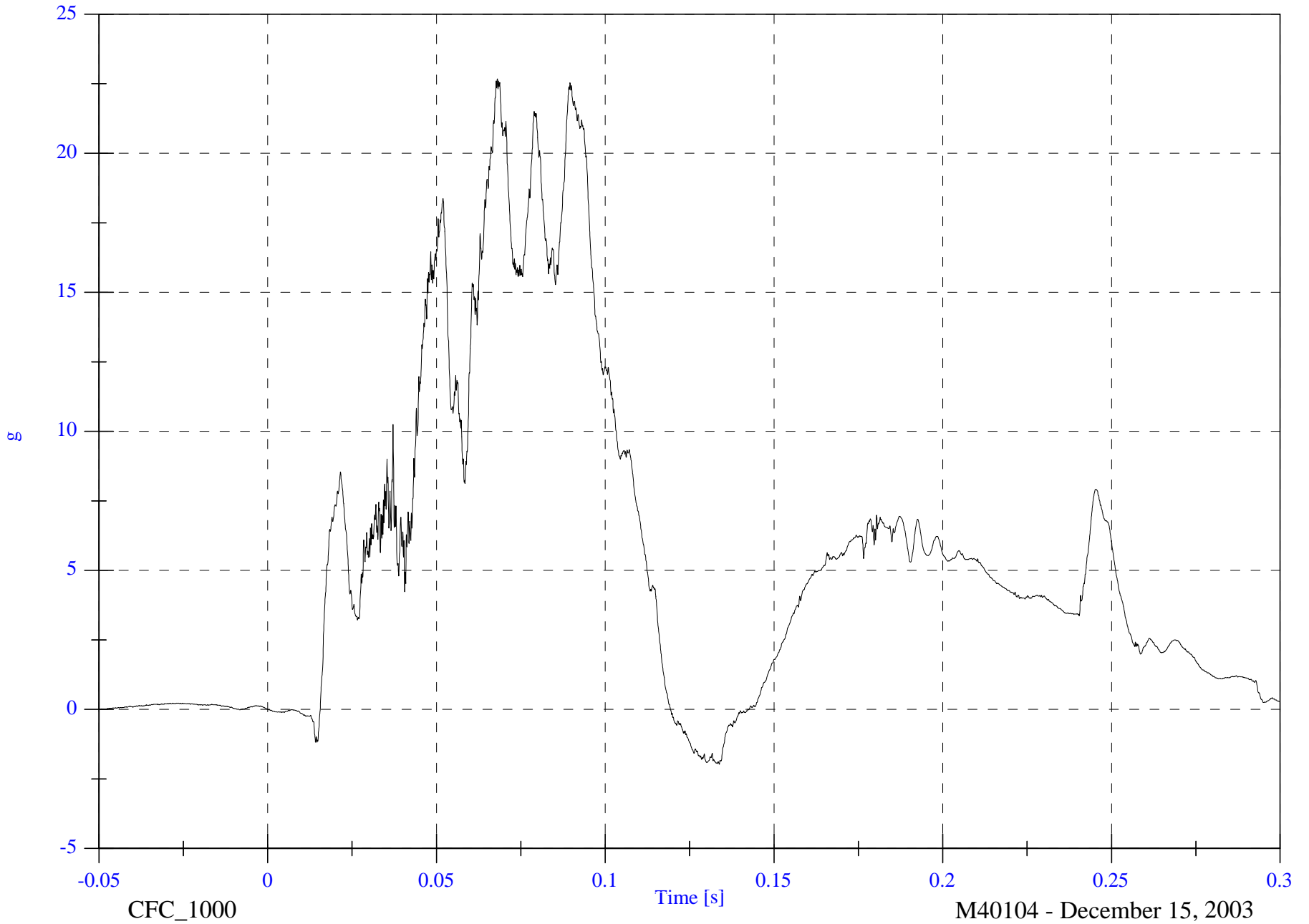
V1P2 Head 9 Array Y Arm Az

Max: 22.7 [g] at 0.068 [s]

Min: -2.0 [g] at 0.134 [s]

B-65

8642-NCAP-37



CFC_1000

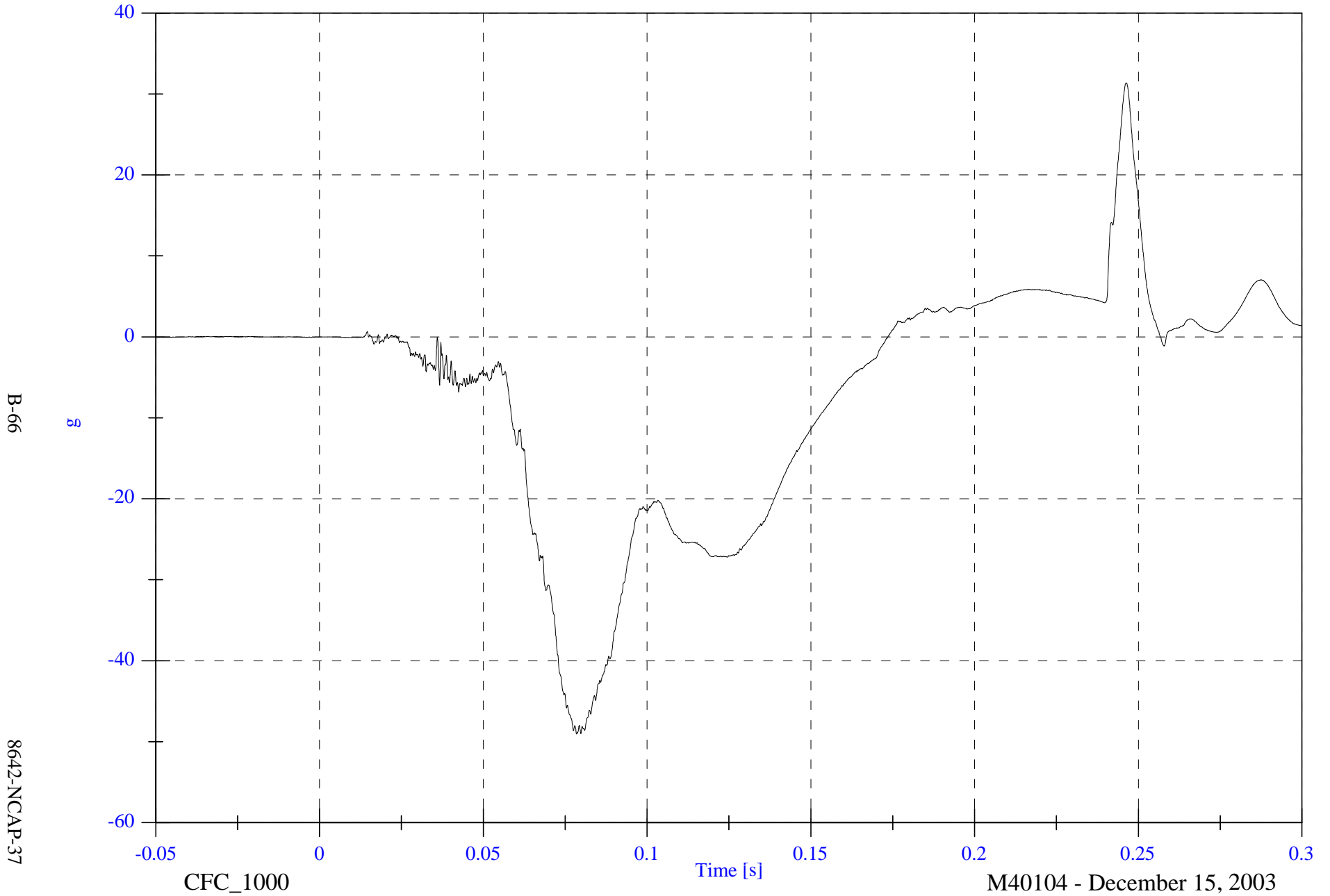
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Head 9 Array Z Arm Ax

Max: 31.4 [g] at 0.246 [s]

Min: -49.1 [g] at 0.078 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

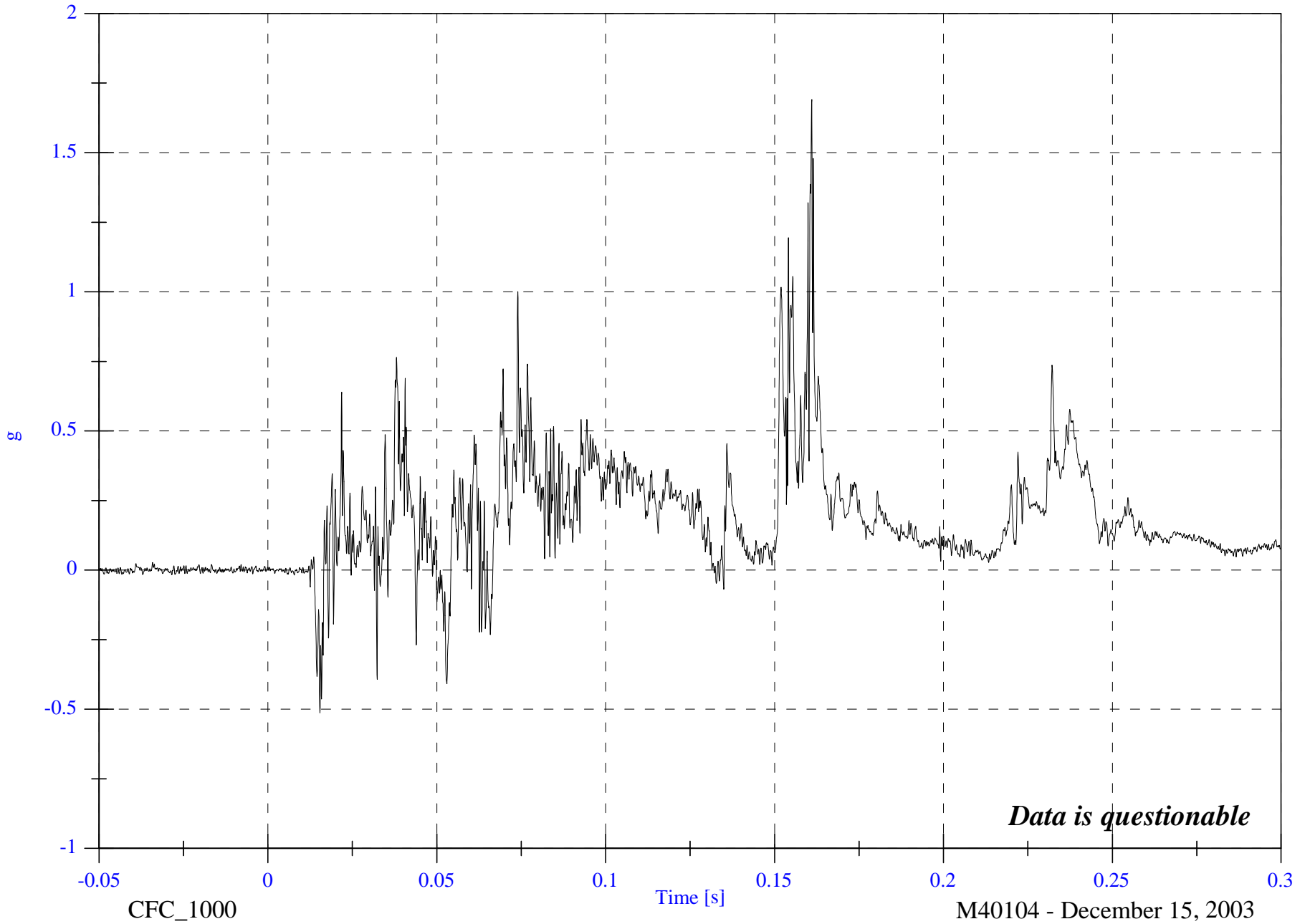
V1P2 Head 9 Array Z Arm Ay

Max: 1.7 [g] at 0.161 [s]

Min: -0.5 [g] at 0.015 [s]

B-67

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

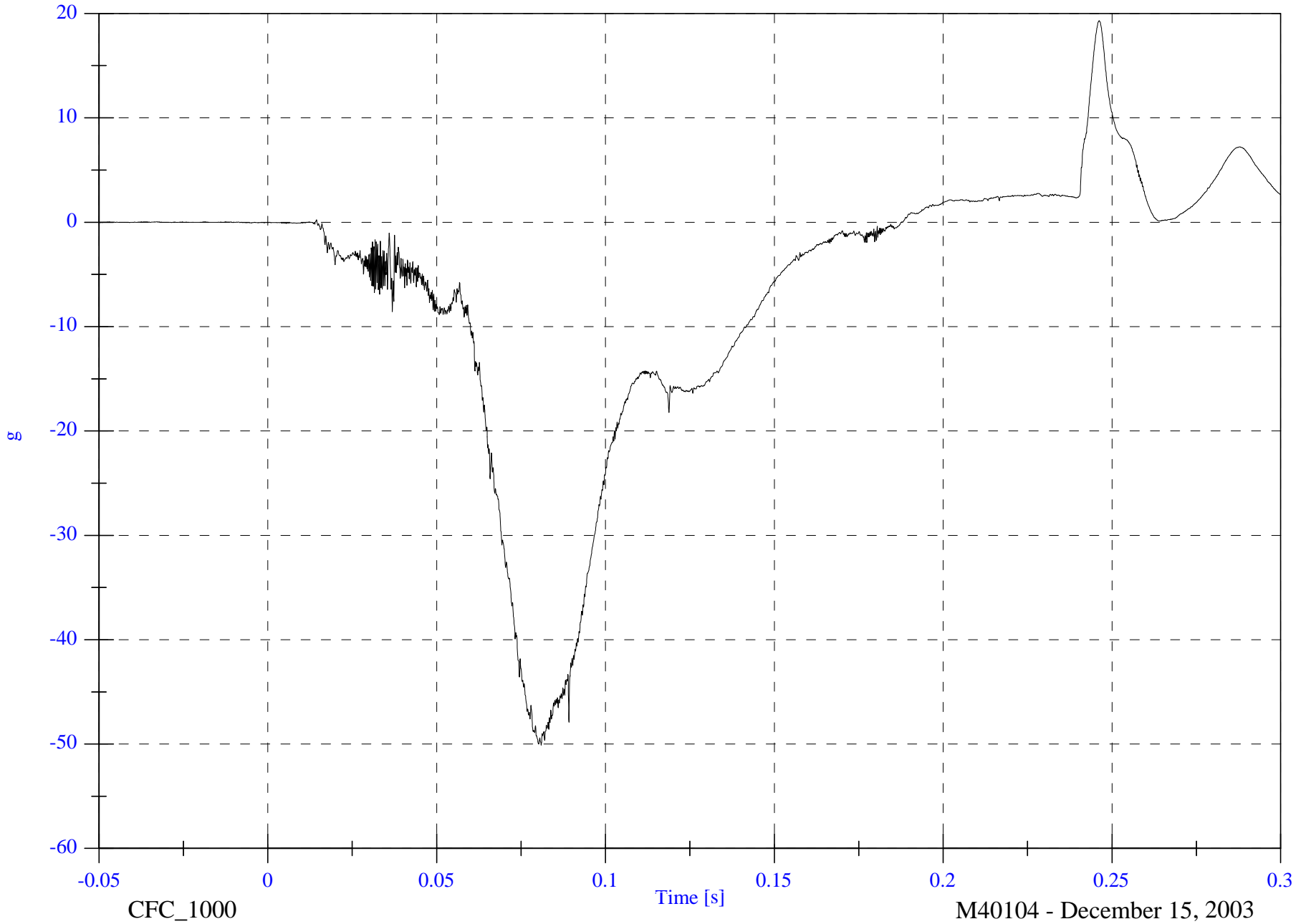
V1P2 Head CG x

Max: 19.3 [g] at 0.246 [s]

Min: -50.1 [g] at 0.081 [s]

B-68

8642-NCAP-37

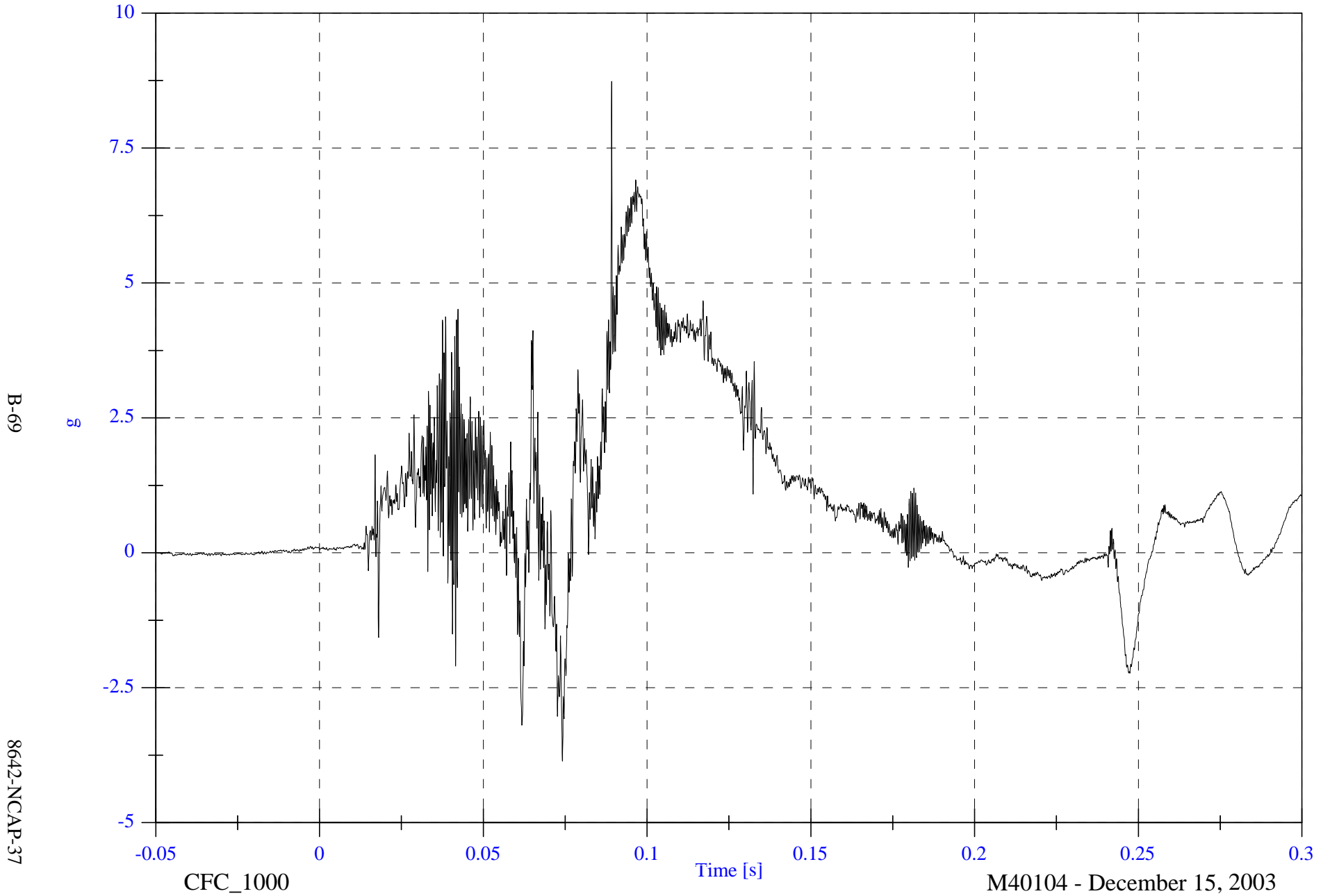


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 8.7 [g] at 0.089 [s]

Min: -3.9 [g] at 0.074 [s]

V1P2 Head CG y

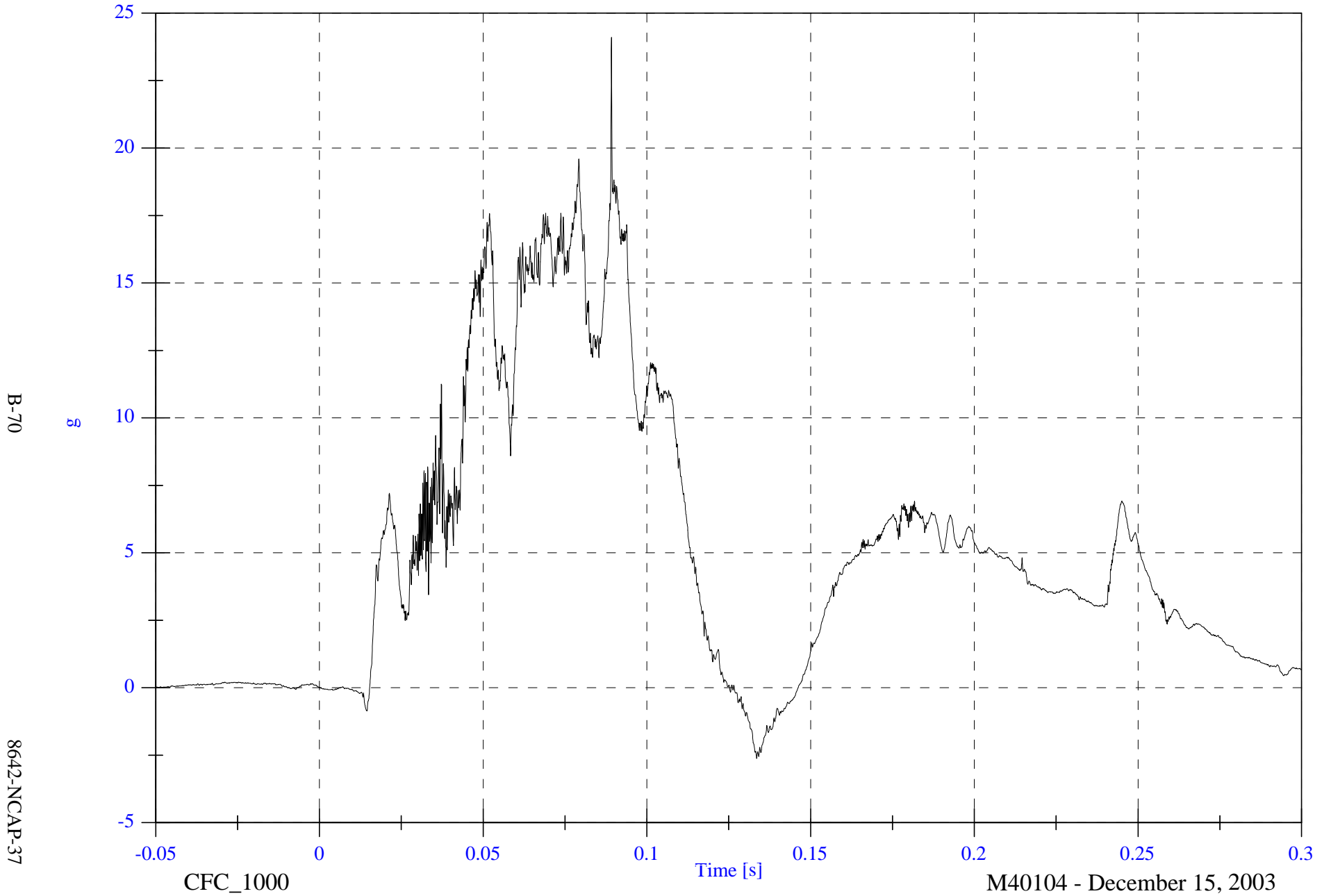


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Head CG z

Max: 24.1 [g] at 0.089 [s]

Min: -2.6 [g] at 0.134 [s]



B-70

8642-NCAP-37

CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

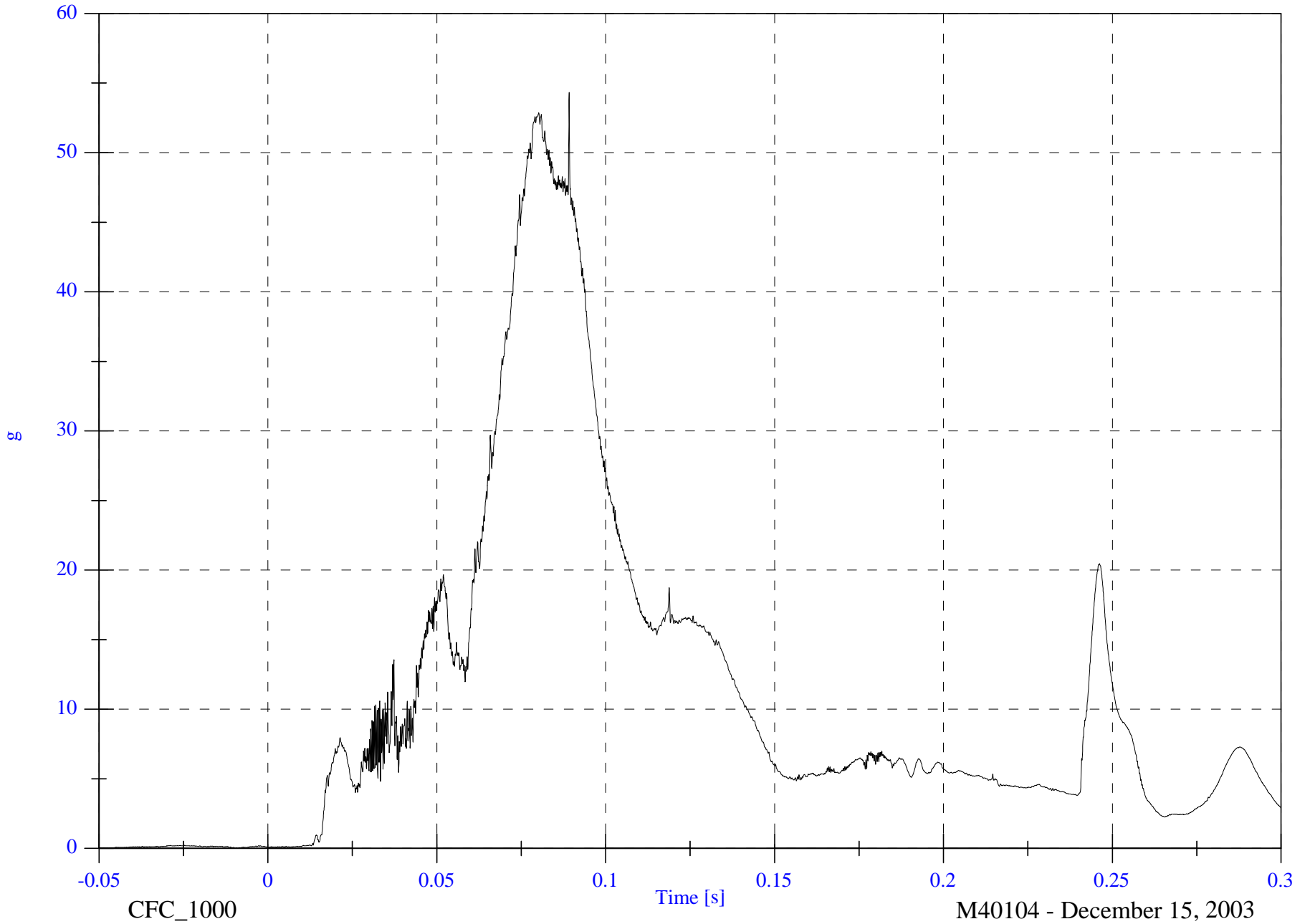
V1P2 Head CG Resultant

Max: 54.3 [g] at 0.089 [s]

Min: 0.0 [g] at -0.009 [s]

B-71

8642-NCAP-37



CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

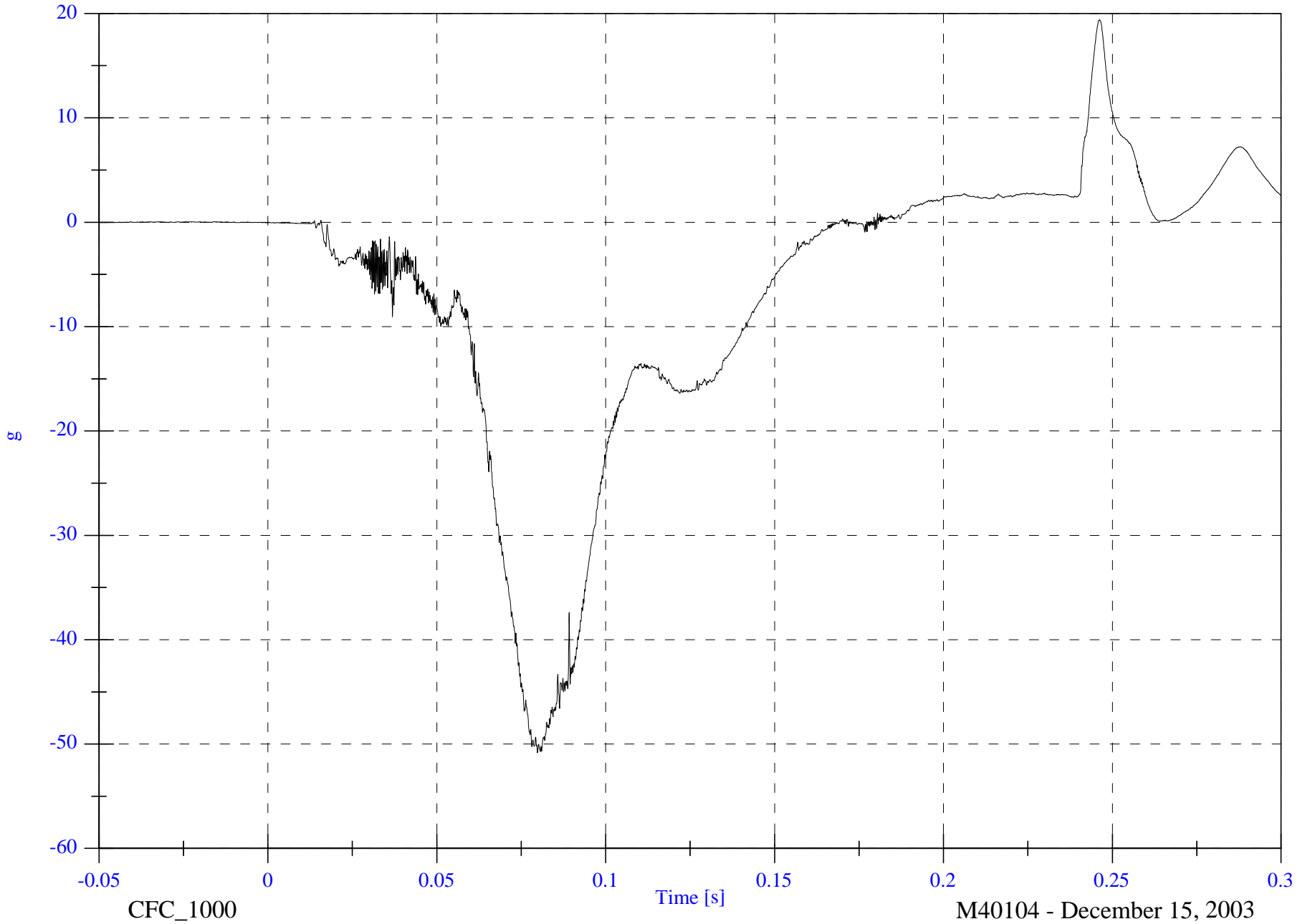
V1P2 Head CG Red x

Max: 19.4 [g] at 0.246 [s]

Min: -50.8 [g] at 0.080 [s]

B-72

8642-NCAP-37

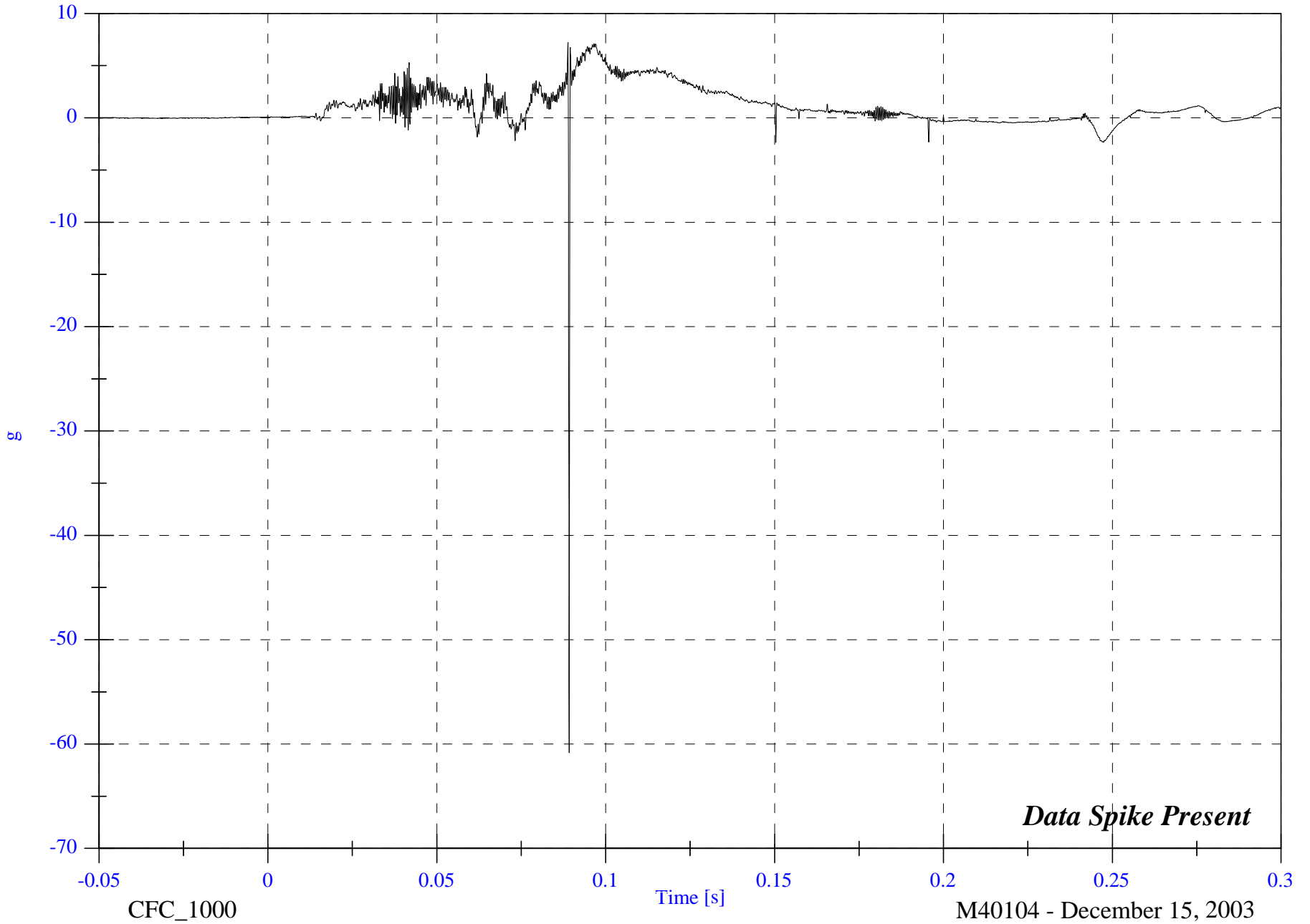


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 7.2 [g] at 0.089 [s]

Min: -60.8 [g] at 0.089 [s]

V1P2 Head CG Red y



B-73

8642-NCAP-37

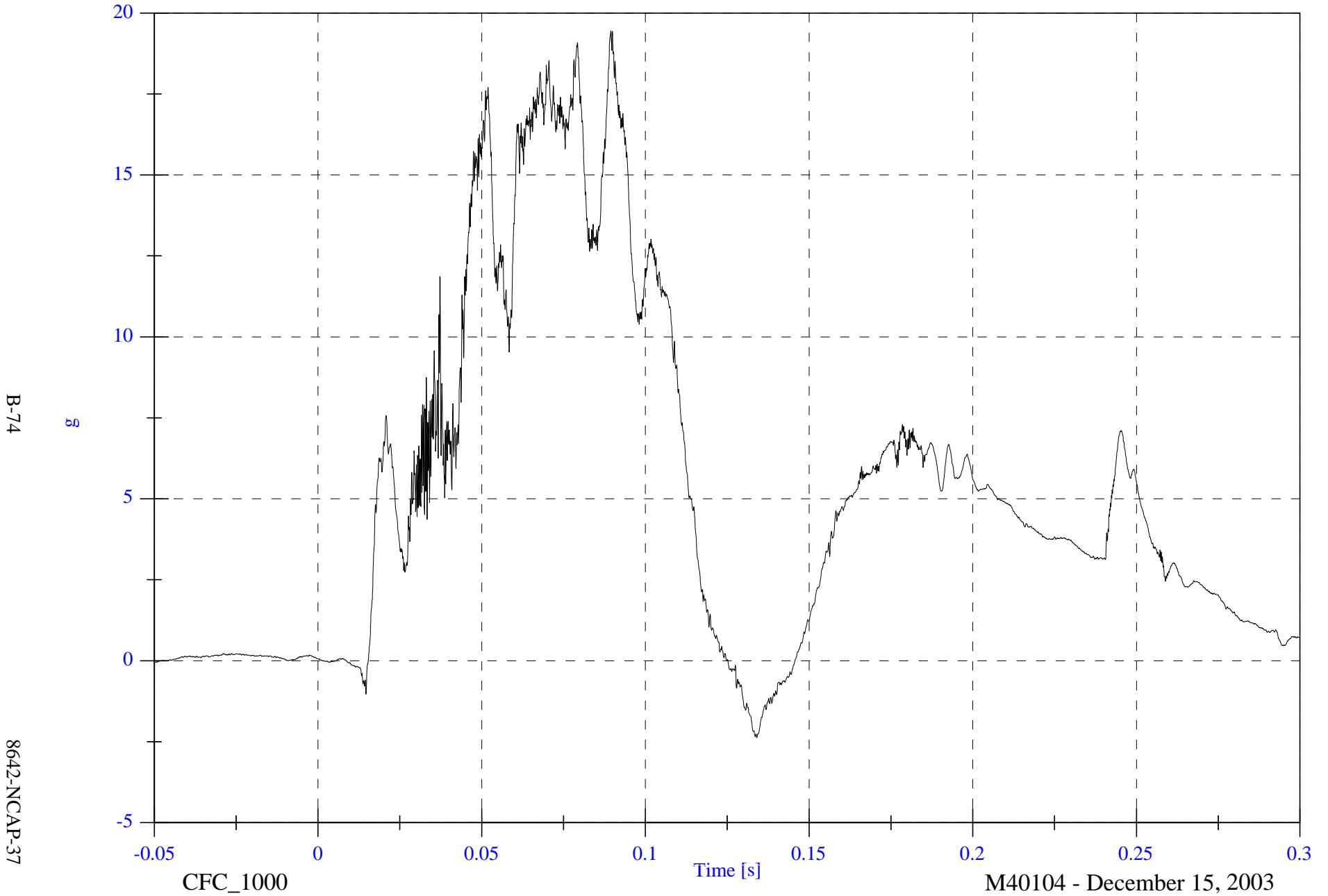
CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 19.4 [g] at 0.089 [s]
Min: -2.4 [g] at 0.134 [s]

V1P2 Head CG Red z



2004 NCAP Test 1 2004 Chevrolet Malibu

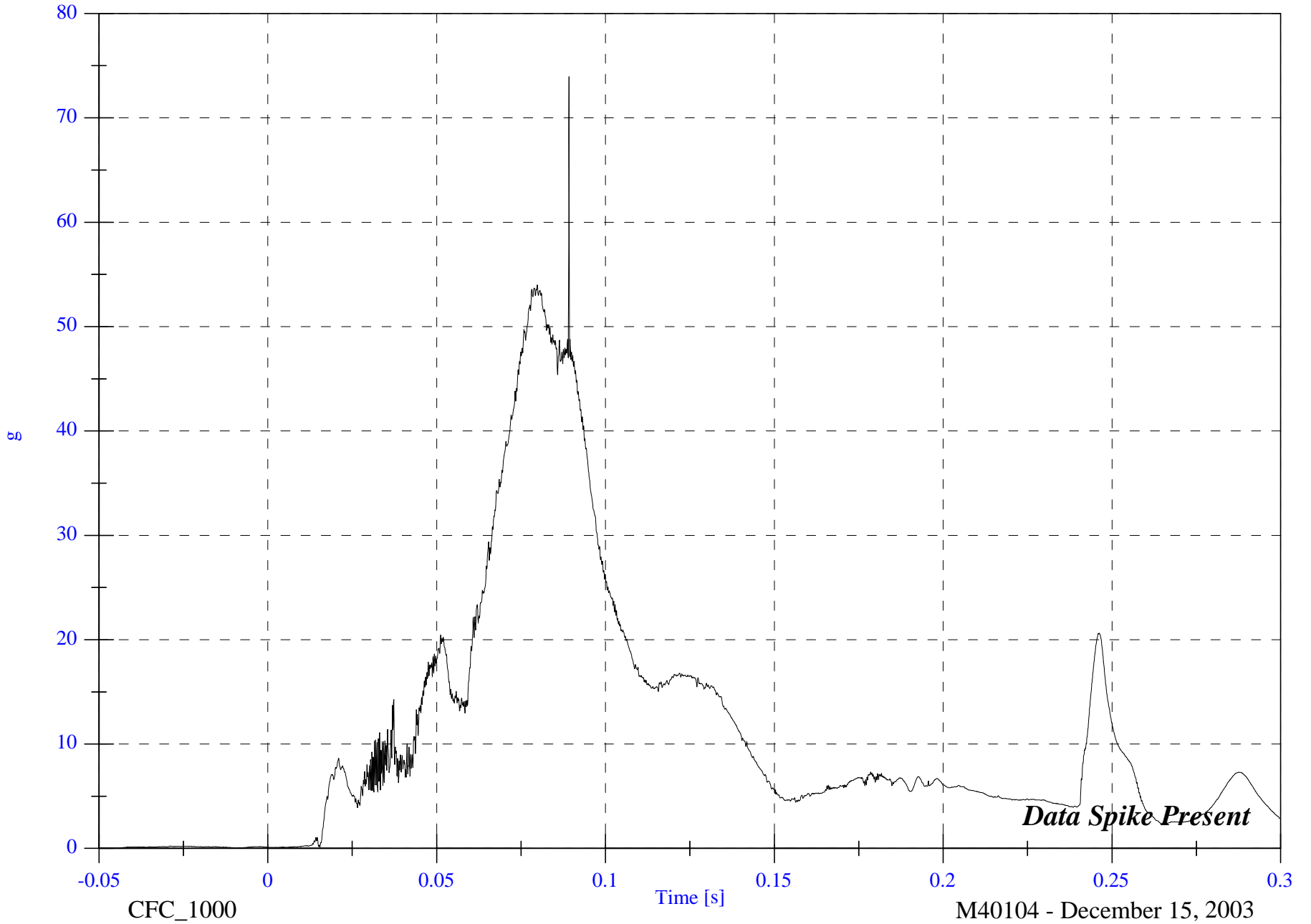
V1P2 Head CG Red Resultant

Max: 73.9 [g] at 0.089 [s]

Min: 0.0 [g] at -0.046 [s]

B-75

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

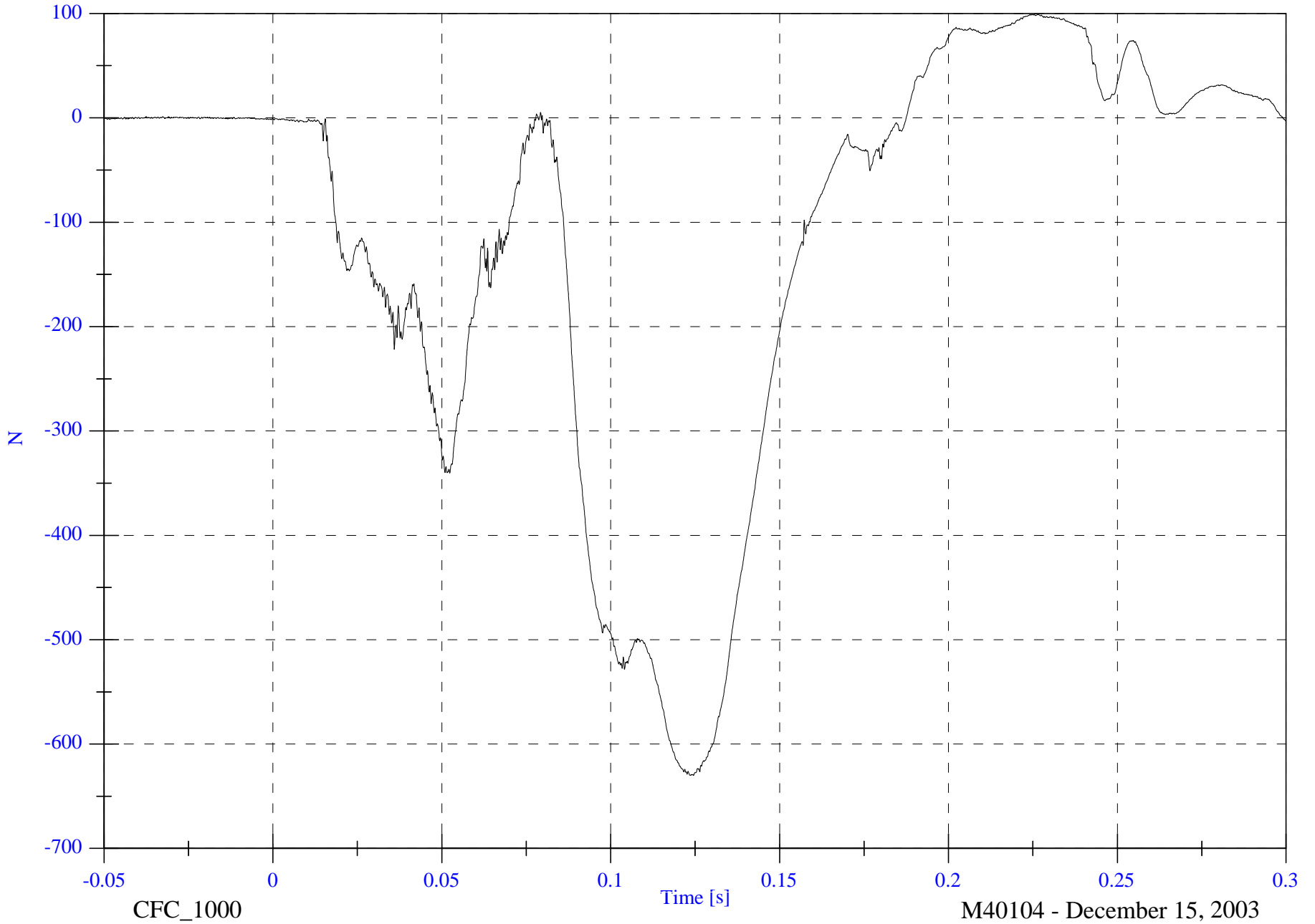
V1P2 Upper Neck Fx

Max: 99.0 [N] at 0.225 [s]

Min: -630.1 [N] at 0.124 [s]

B-76

8642-NCAP-37



CFC_1000

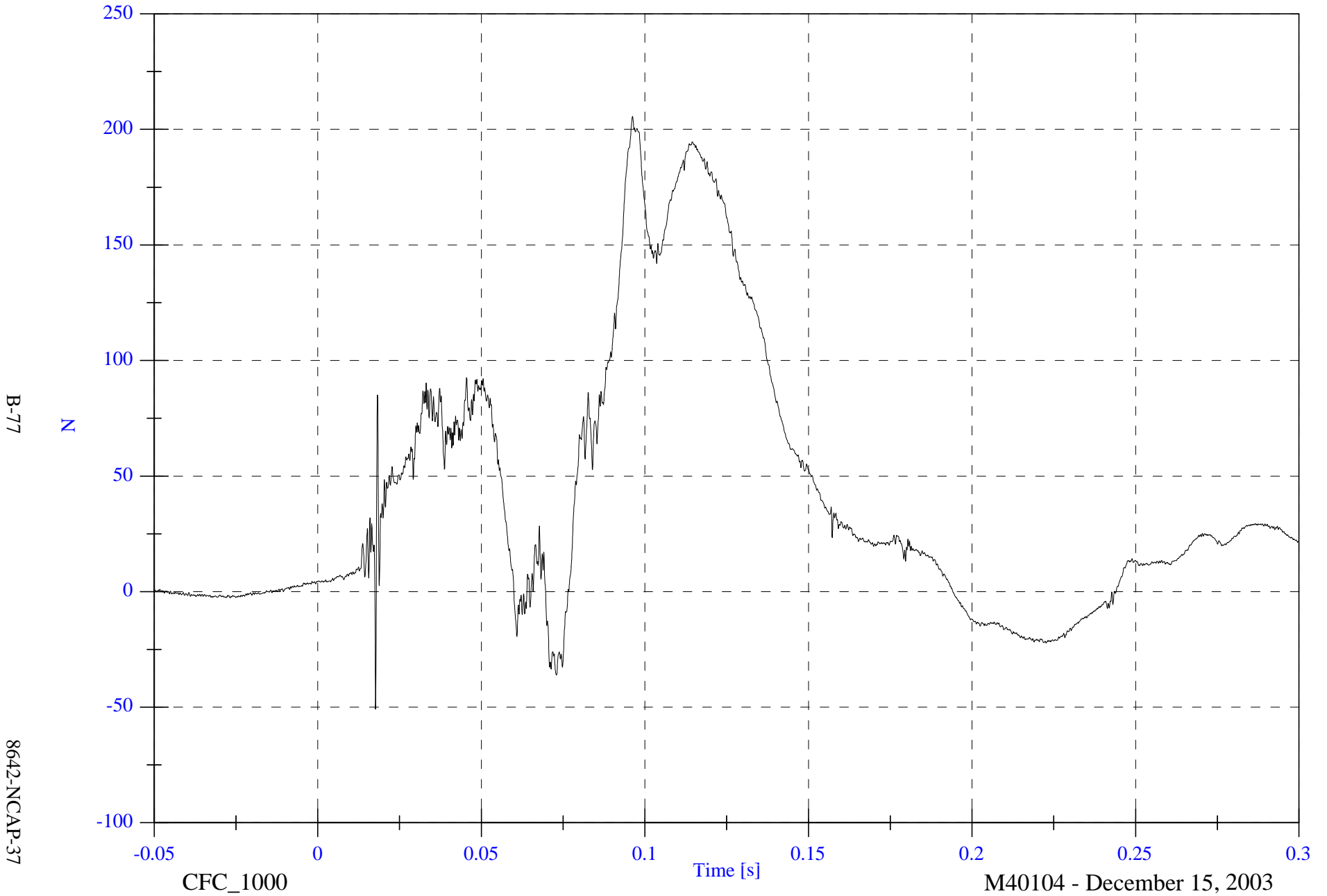
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 205.6 [N] at 0.096 [s]

Min: -50.9 [N] at 0.018 [s]

V1P2 Upper Neck Fy

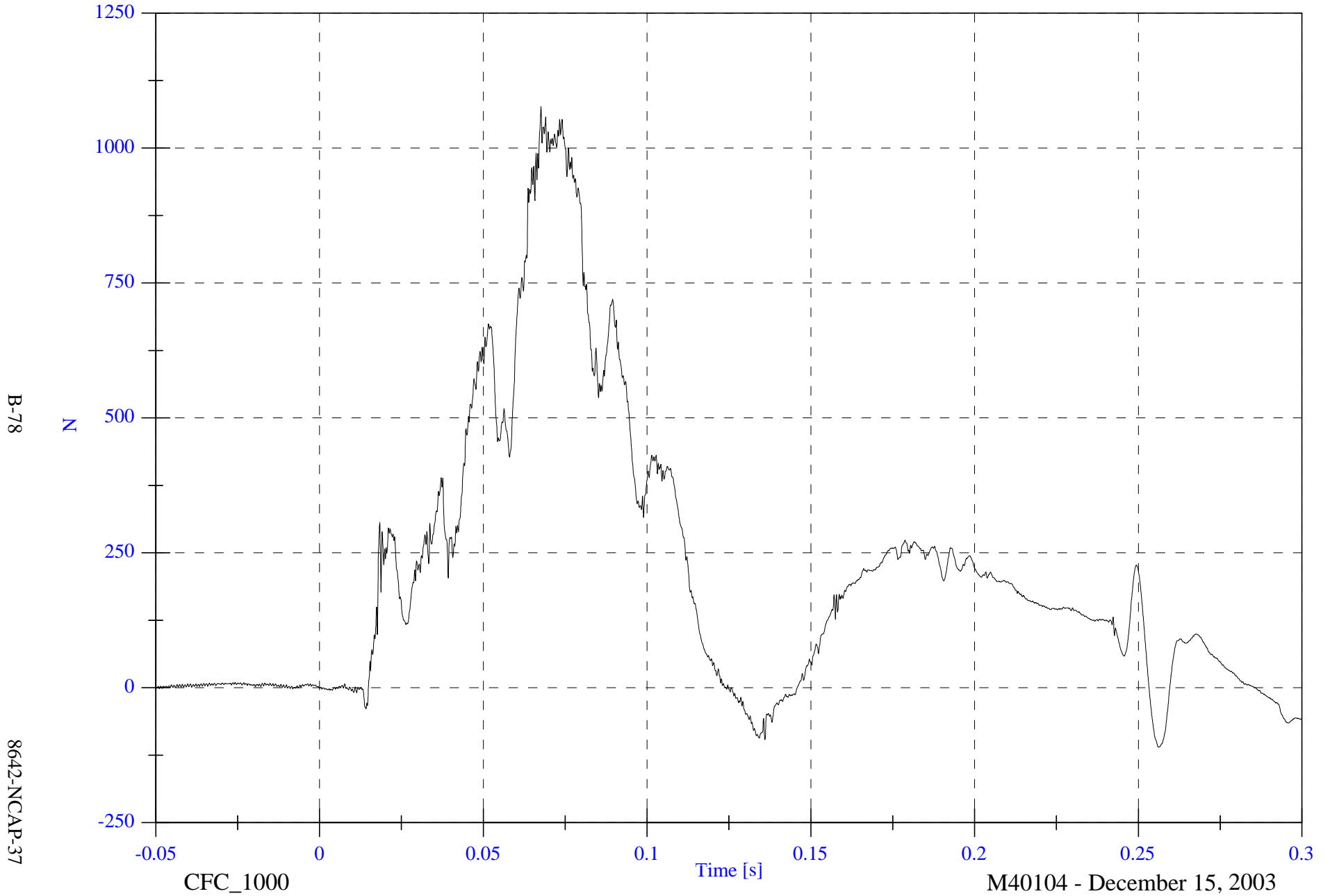


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1077.1 [N] at 0.068 [s]

Min: -110.2 [N] at 0.256 [s]

V1P2 Upper Neck Fz



B-78

8642-NCAP-37

CFC_1000

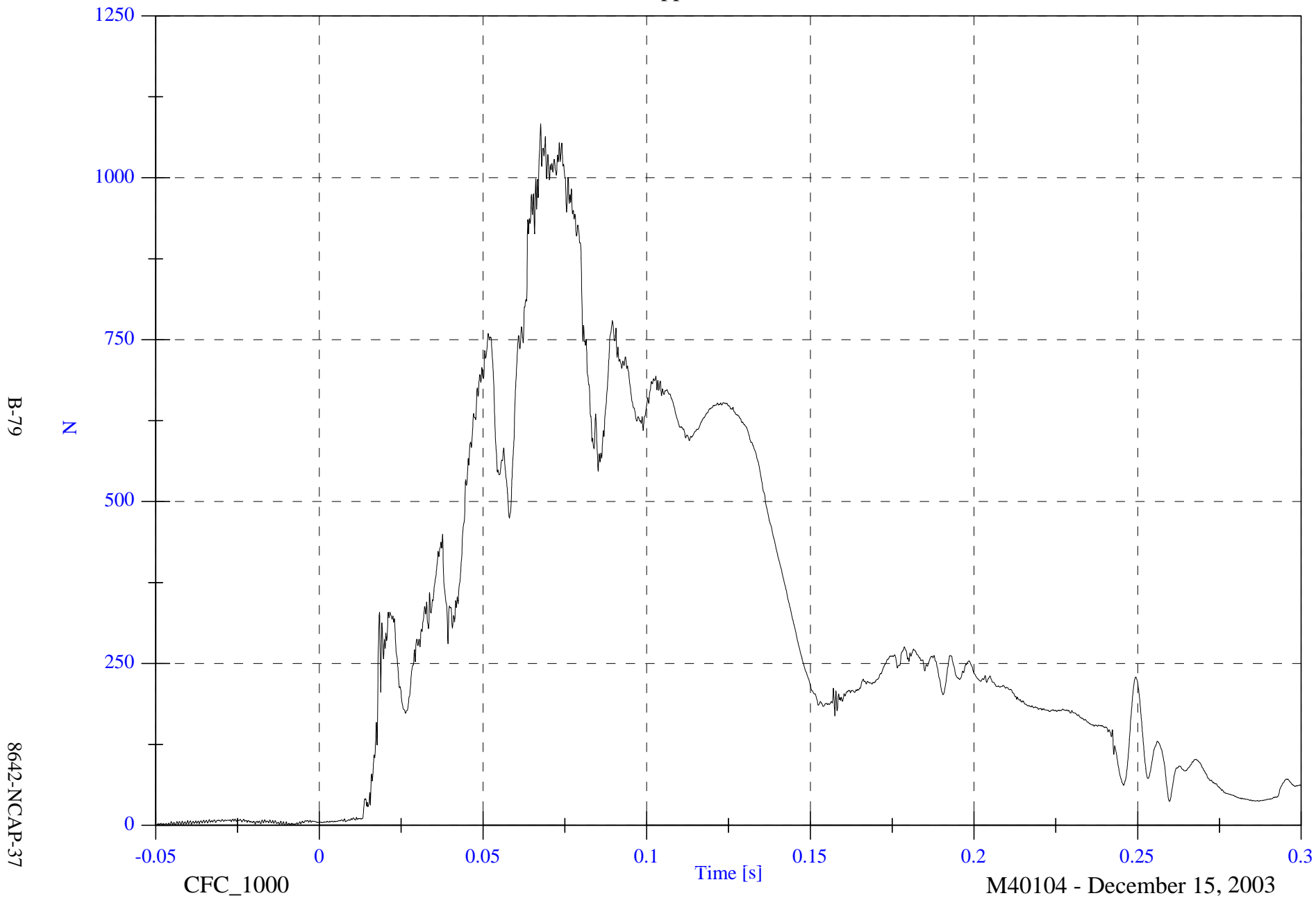
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Upper Neck F Resultant

Max: 1083.6 [N] at 0.068 [s]

Min: 0.3 [N] at -0.046 [s]



B-79

8642-NCAP-37

CFC_1000

Time [s]

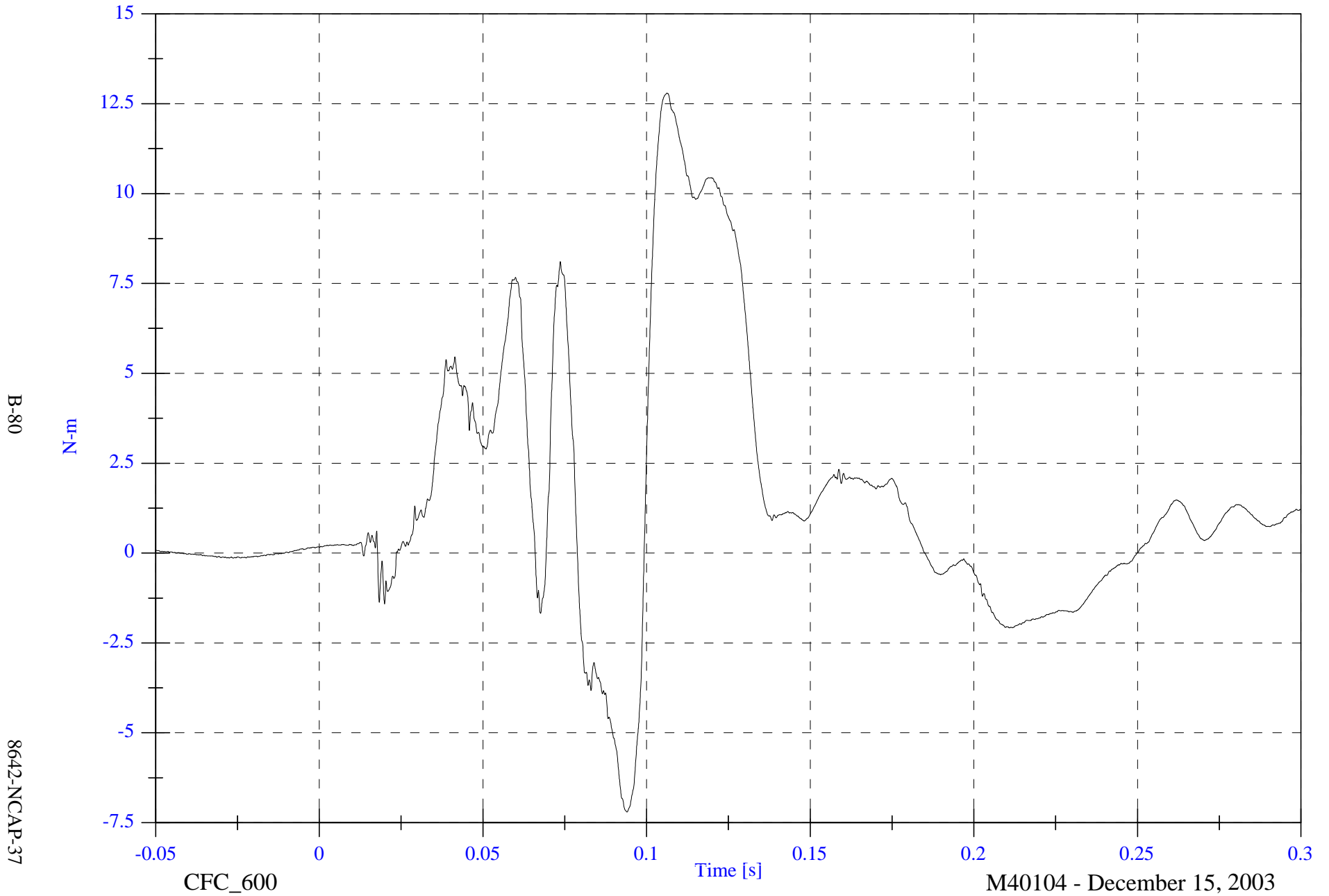
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 12.8 [N-m] at 0.106 [s]

Min: -7.2 [N-m] at 0.094 [s]

V1P2 Upper Neck Mx



B-80

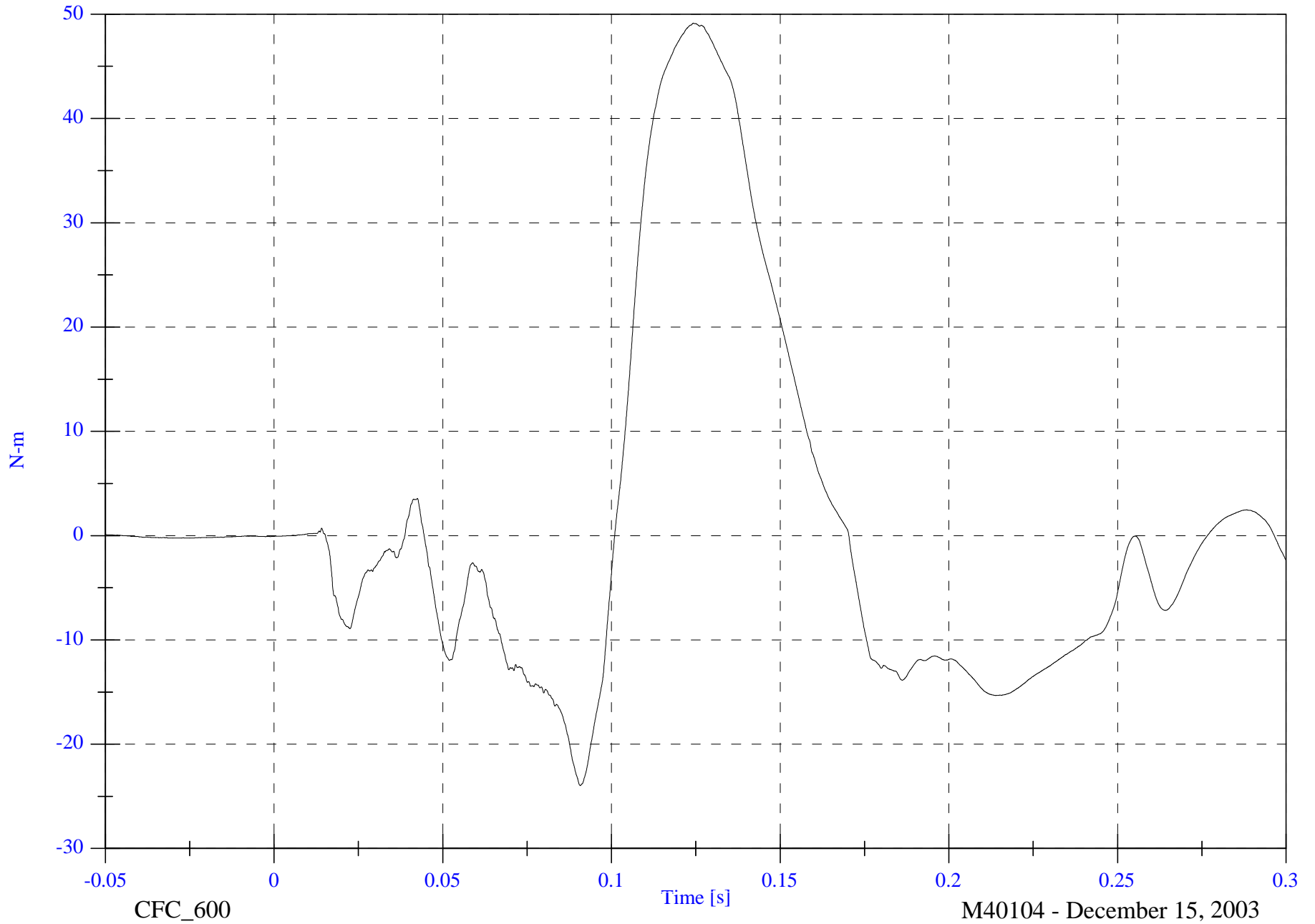
8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 49.1 [N-m] at 0.124 [s]

Min: -24.0 [N-m] at 0.091 [s]

V1P2 Upper Neck My



B-81

8642-NCAP-37

CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

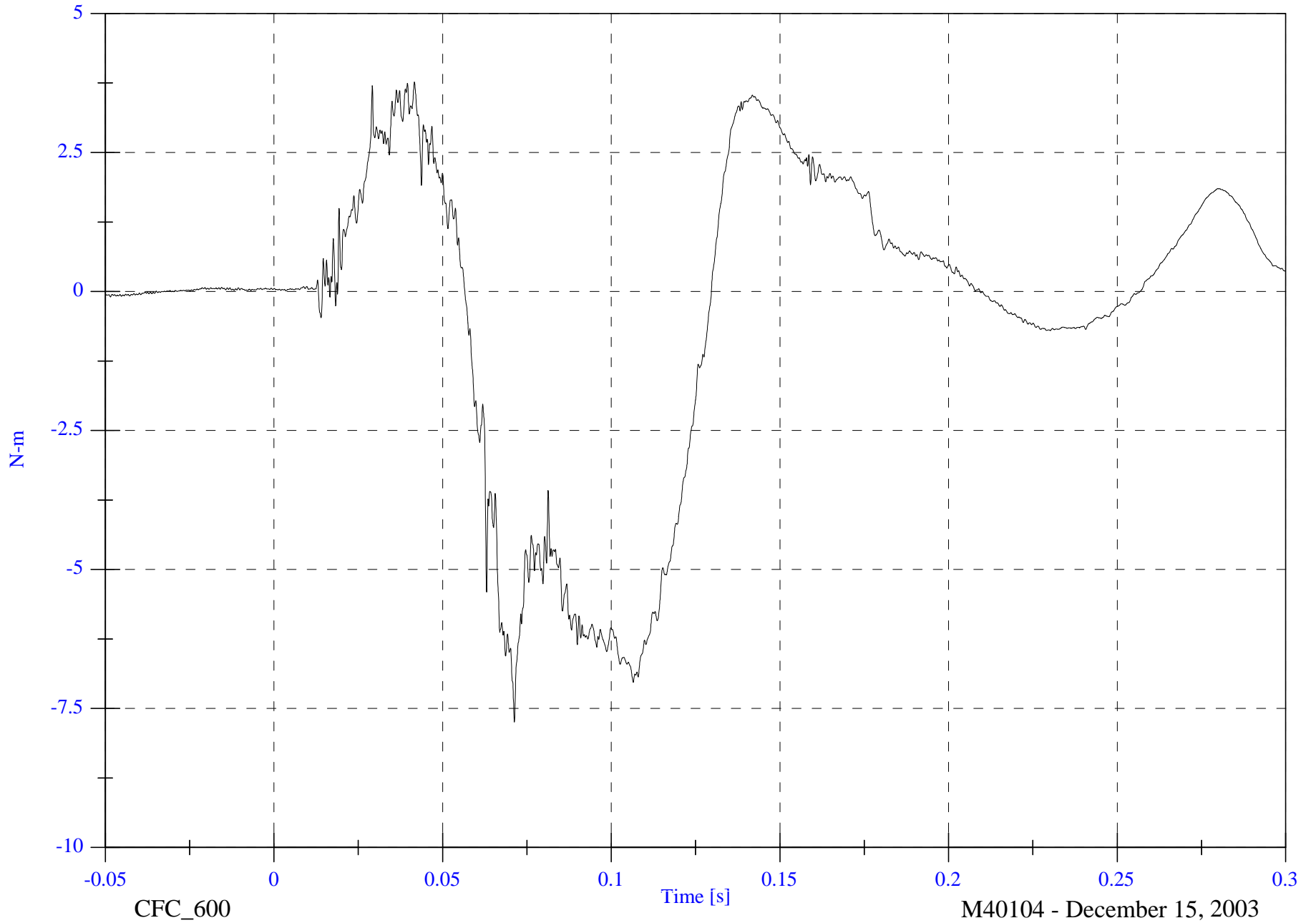
Max: 3.8 [N-m] at 0.042 [s]

V1P2 Upper Neck Mz

Min: -7.7 [N-m] at 0.071 [s]

B-82

8642-NCAP-37



CFC_600

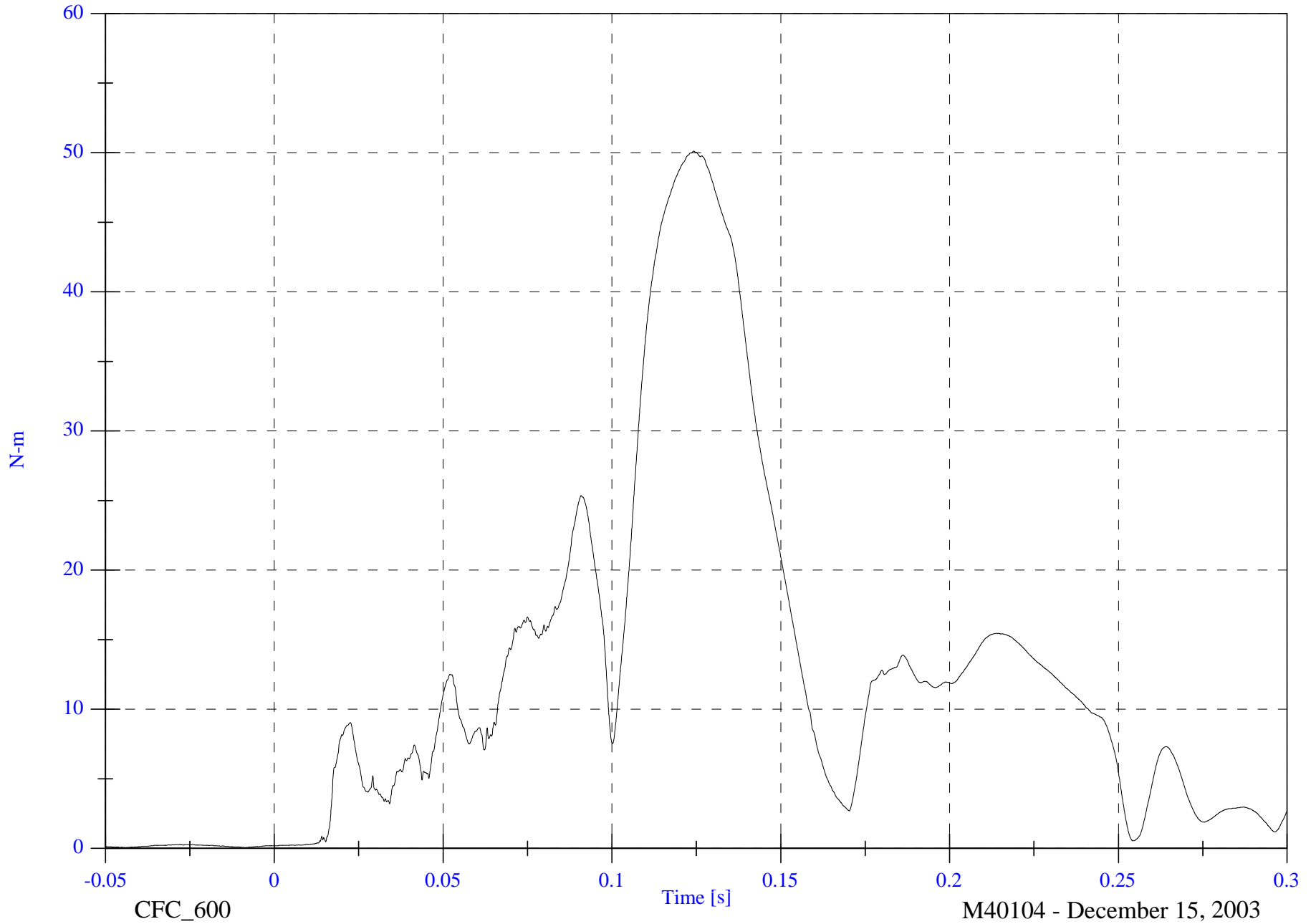
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Upper Neck M Resultant

Max: 50.1 [N-m] at 0.124 [s]

Min: 0.1 [N-m] at -0.009 [s]



B-83

8642-NCAP-37

CFC_600

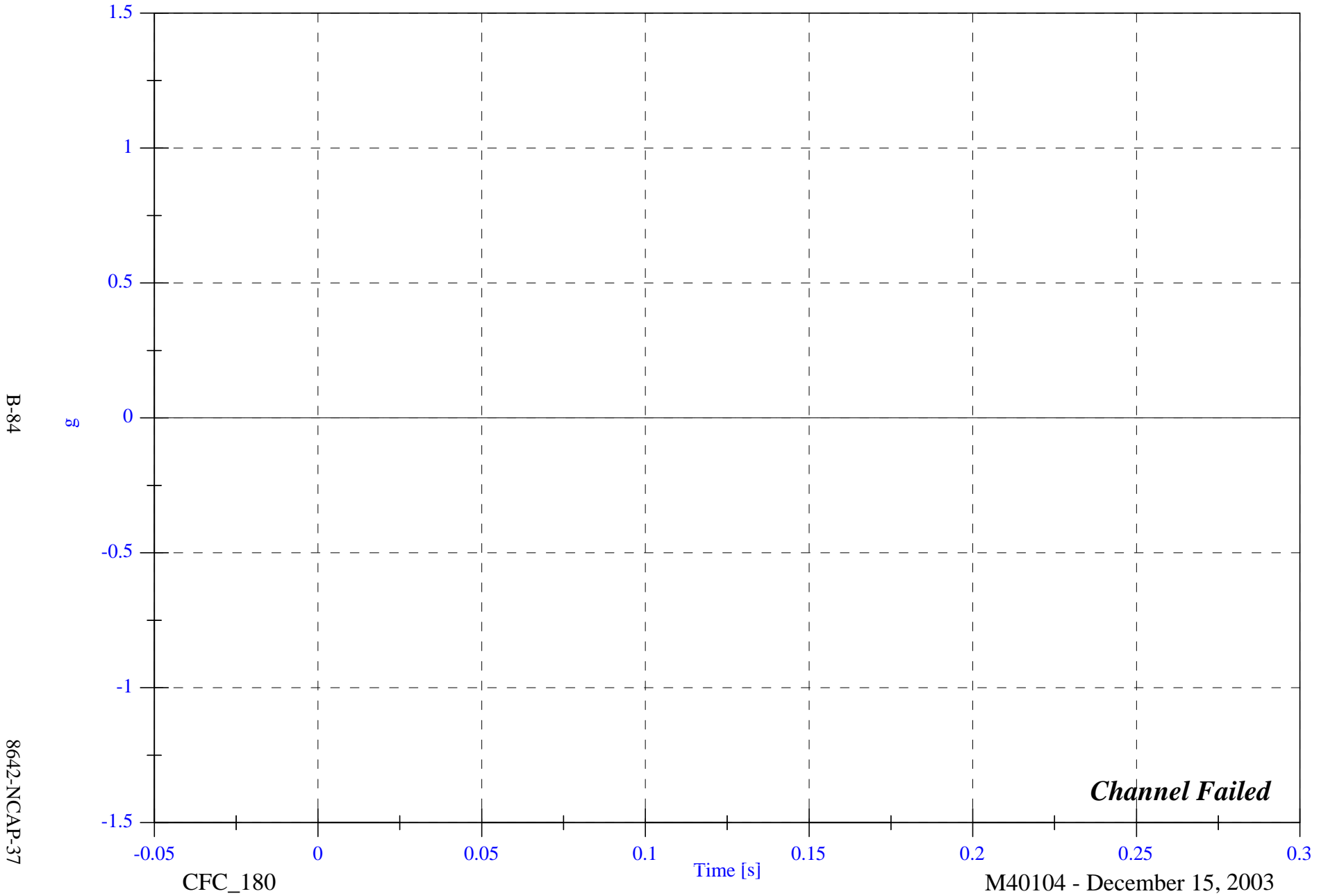
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Chest x

Max: -0.0 [g] at -0.050 [s]

Min: -0.0 [g] at -0.050 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

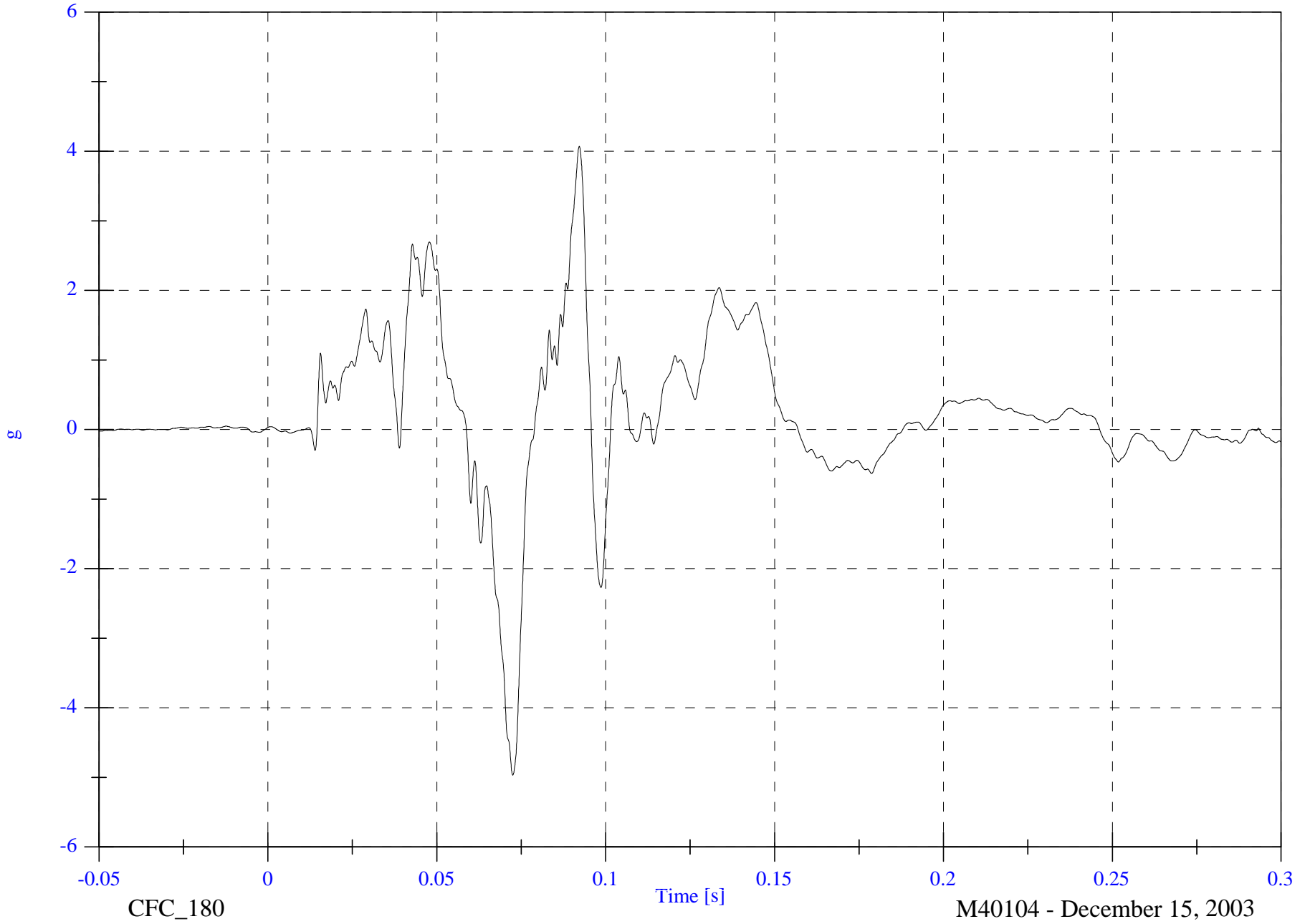
V1P2 Chest y

Max: 4.1 [g] at 0.092 [s]

Min: -5.0 [g] at 0.072 [s]

B-85

8642-NCAP-37



CFC_180

Time [s]

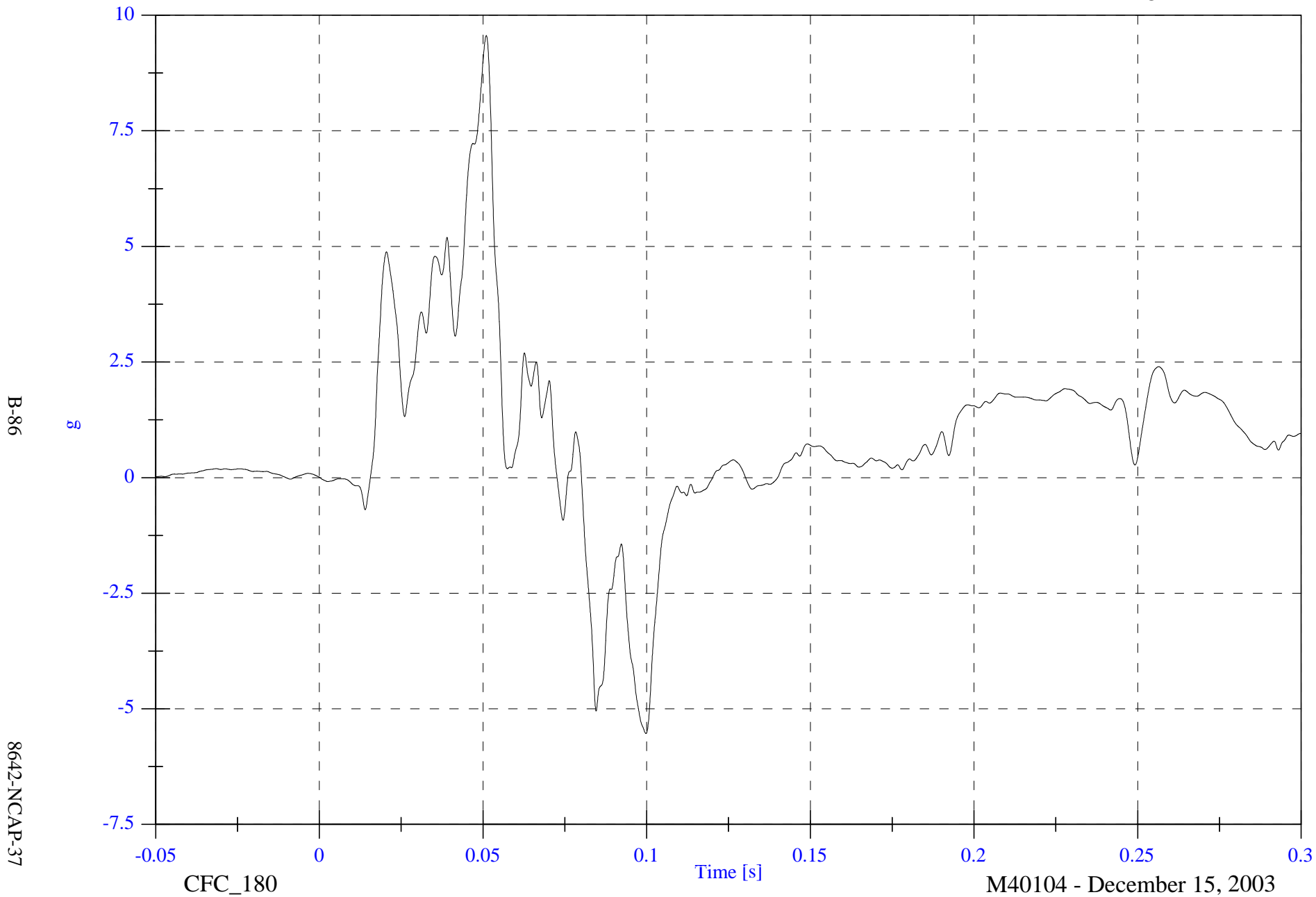
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP2 Chest z

Max: 9.6 [g] at 0.051 [s]

Min: -5.5 [g] at 0.100 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

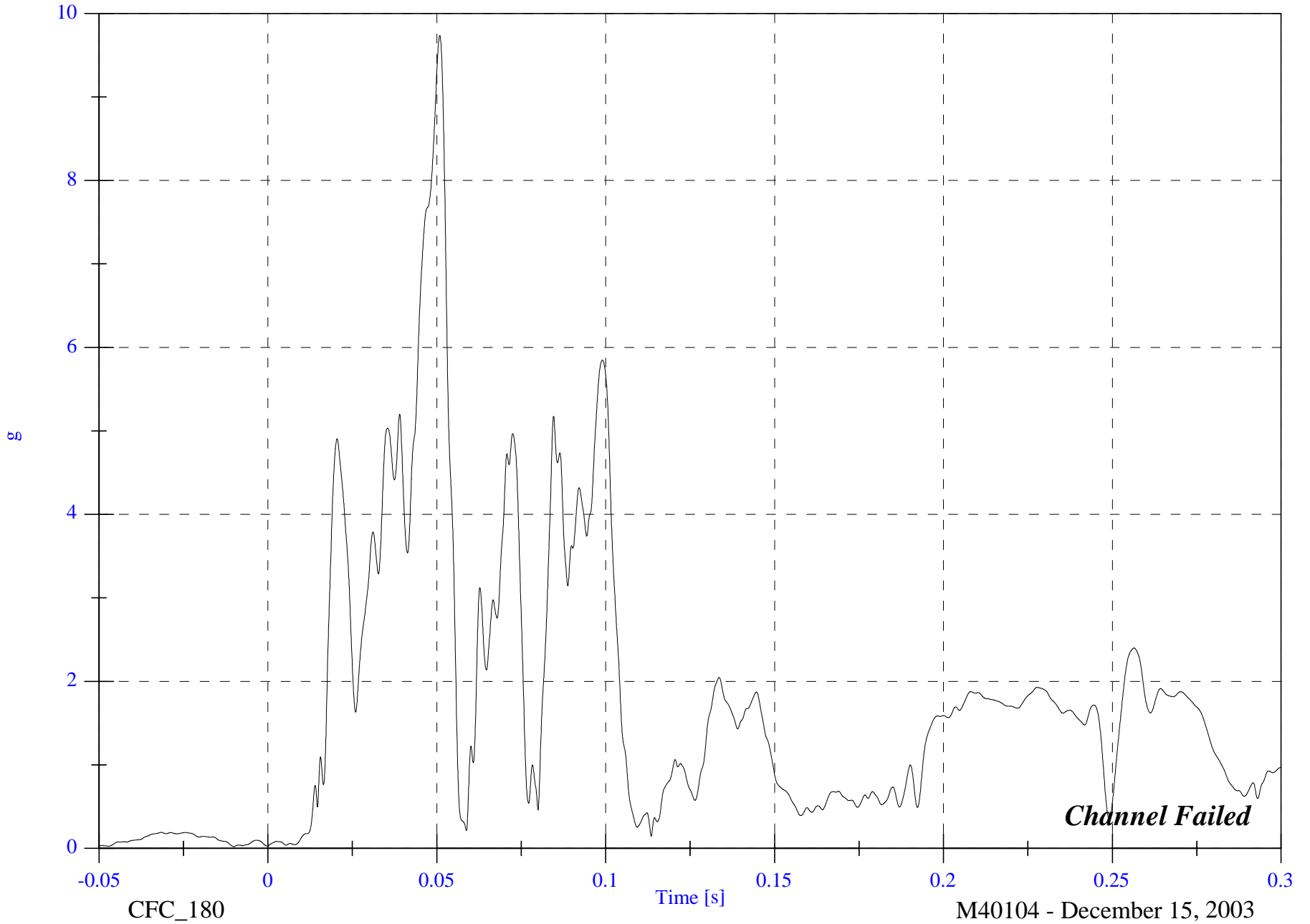
V1P2 Chest Resultant

Max: 9.7 [g] at 0.051 [s]

Min: 0.0 [g] at -0.010 [s]

B-87

8642-NCAP-37



CFC_180

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

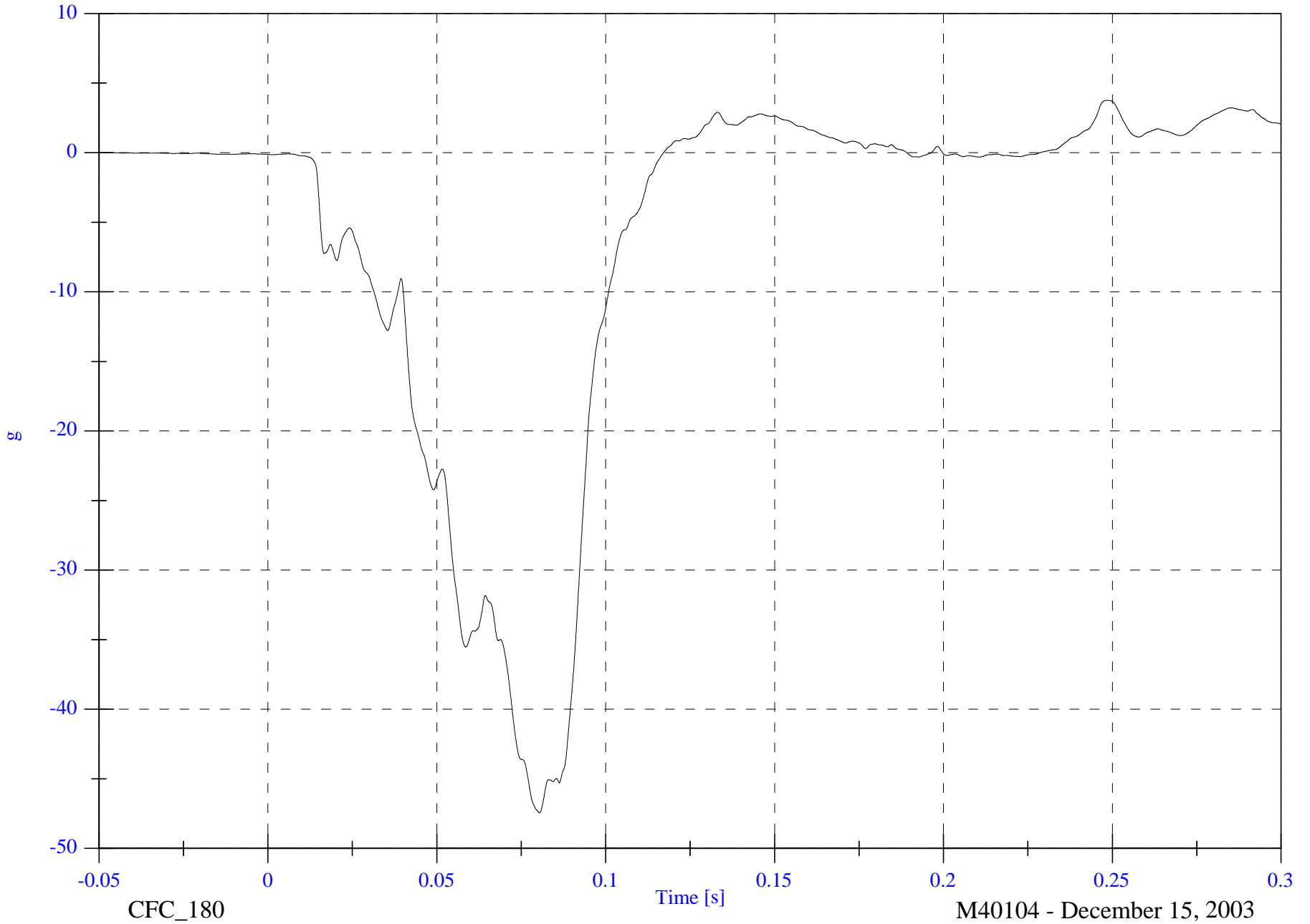
V1P2 Chest Red x

Max: 3.8 [g] at 0.248 [s]

Min: -47.4 [g] at 0.080 [s]

B-88

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

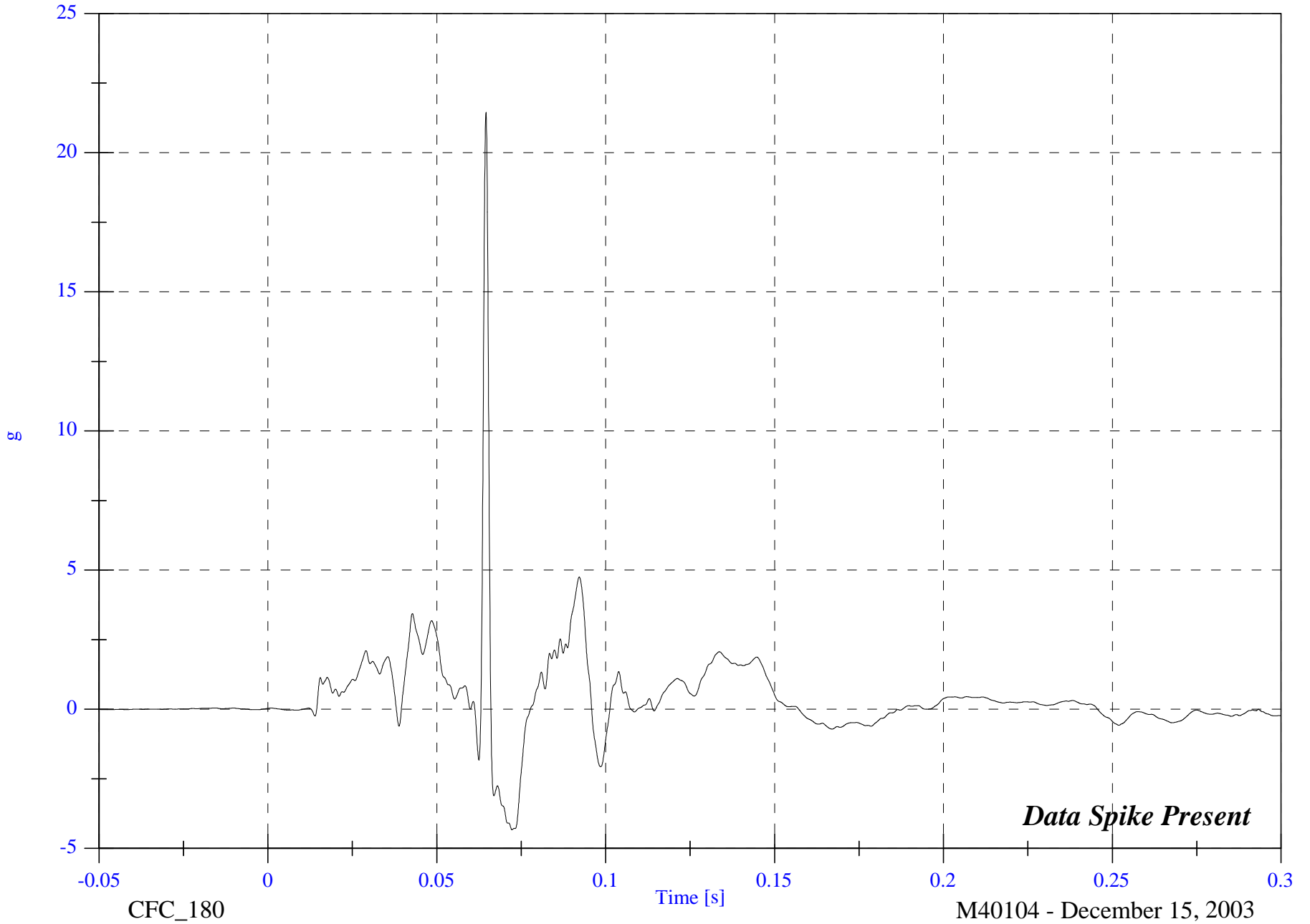
V1P2 Chest Red y

Max: 21.5 [g] at 0.065 [s]

Min: -4.3 [g] at 0.072 [s]

B-89

8642-NCAP-37



CFC_180

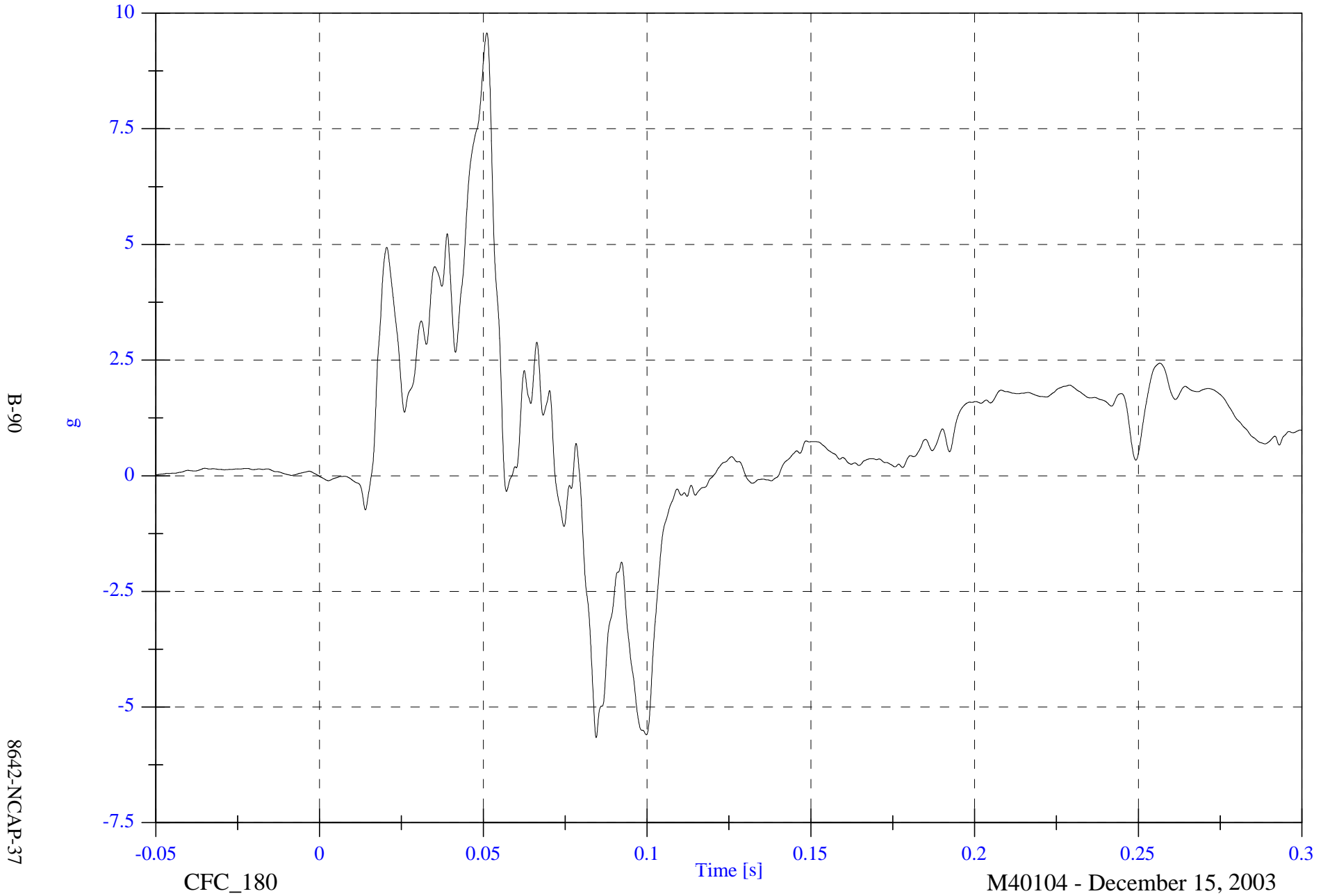
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP2 Chest Red z

Max: 9.6 [g] at 0.051 [s]

Min: -5.7 [g] at 0.084 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

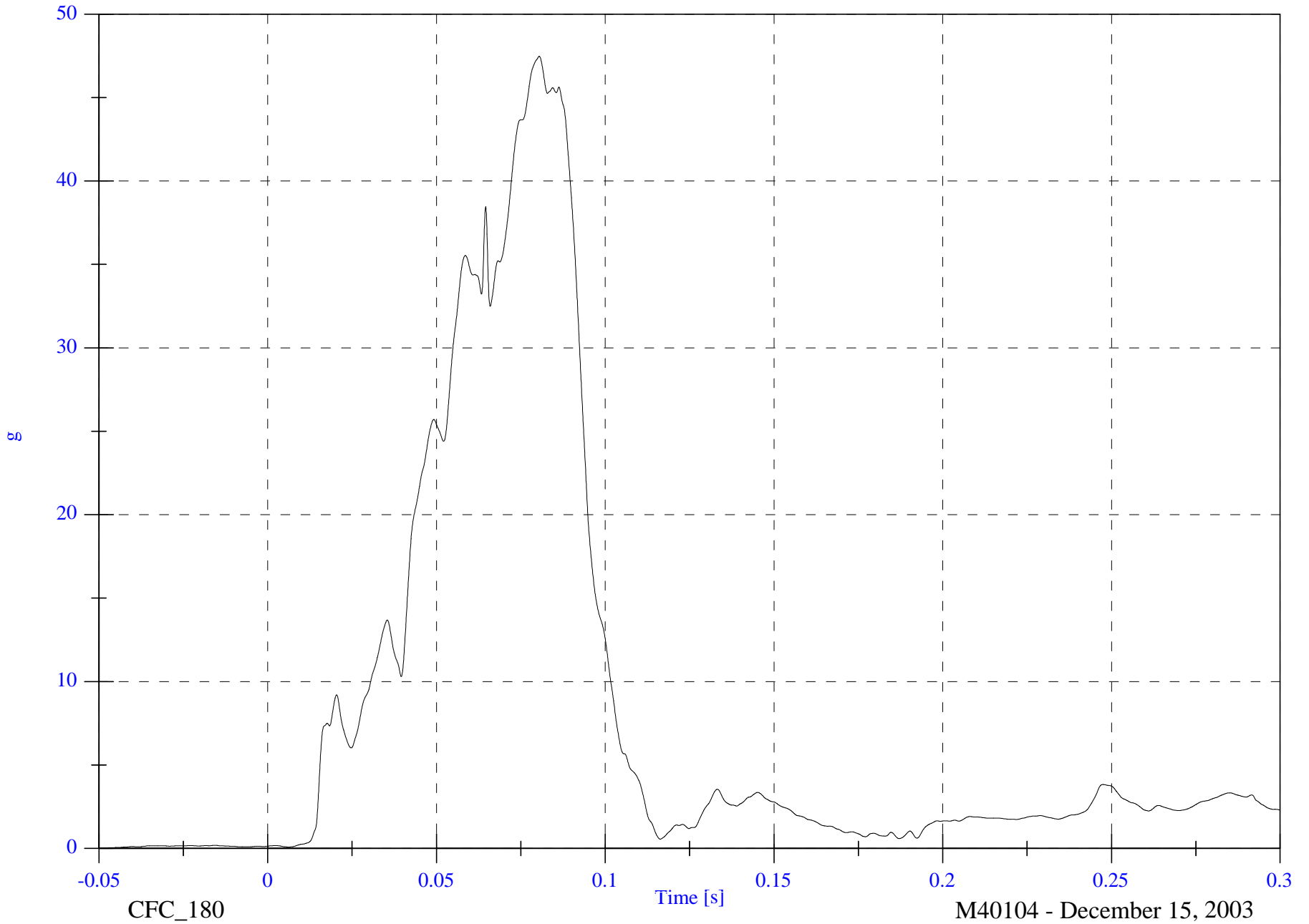
V1P2 Chest Red Resultant

Max: 47.5 [g] at 0.080 [s]

Min: 0.0 [g] at -0.050 [s]

B-91

8642-NCAP-37

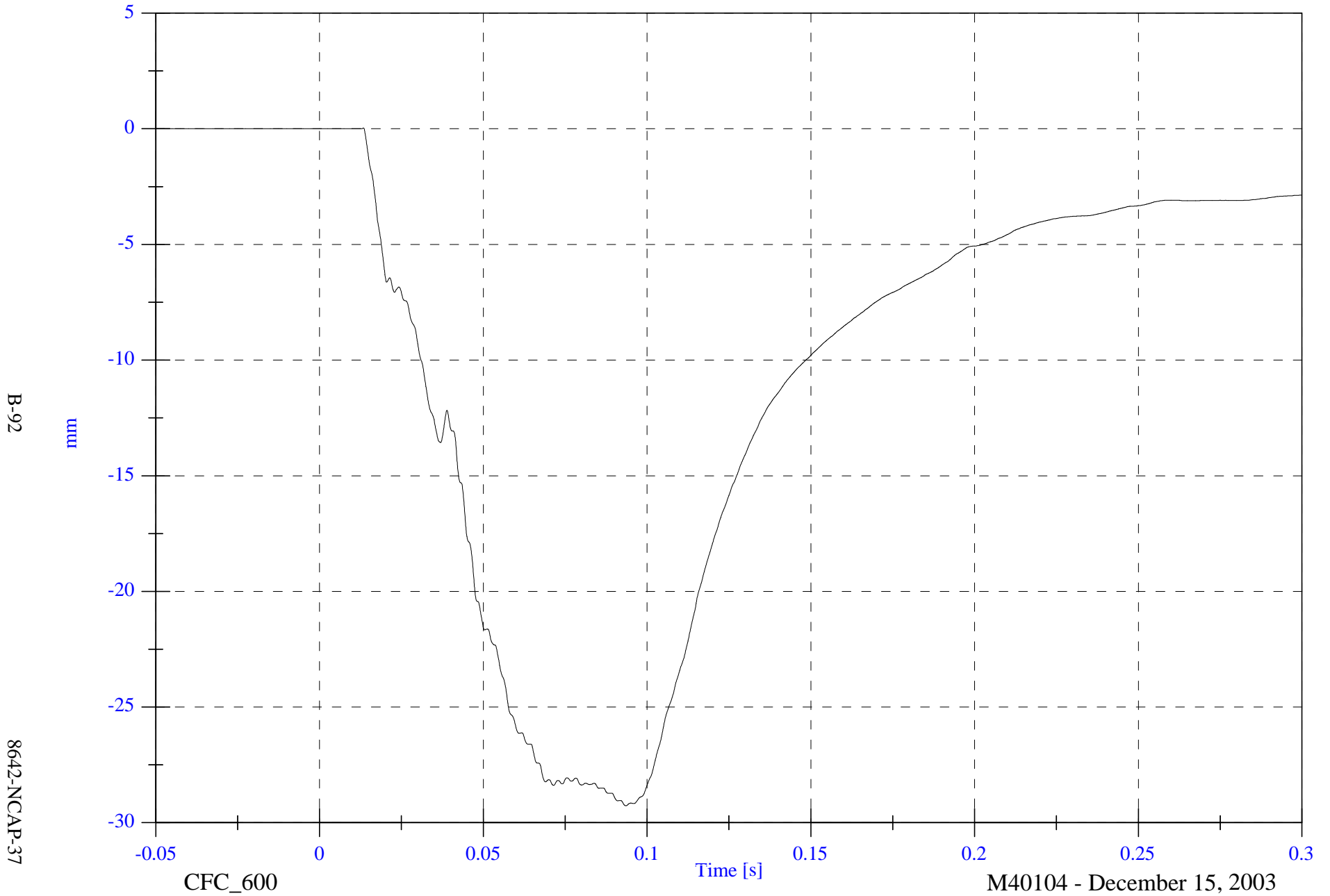


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP2 Chest Compression x

Max: 0.0 [mm] at 0.013 [s]

Min: -29.3 [mm] at 0.094 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

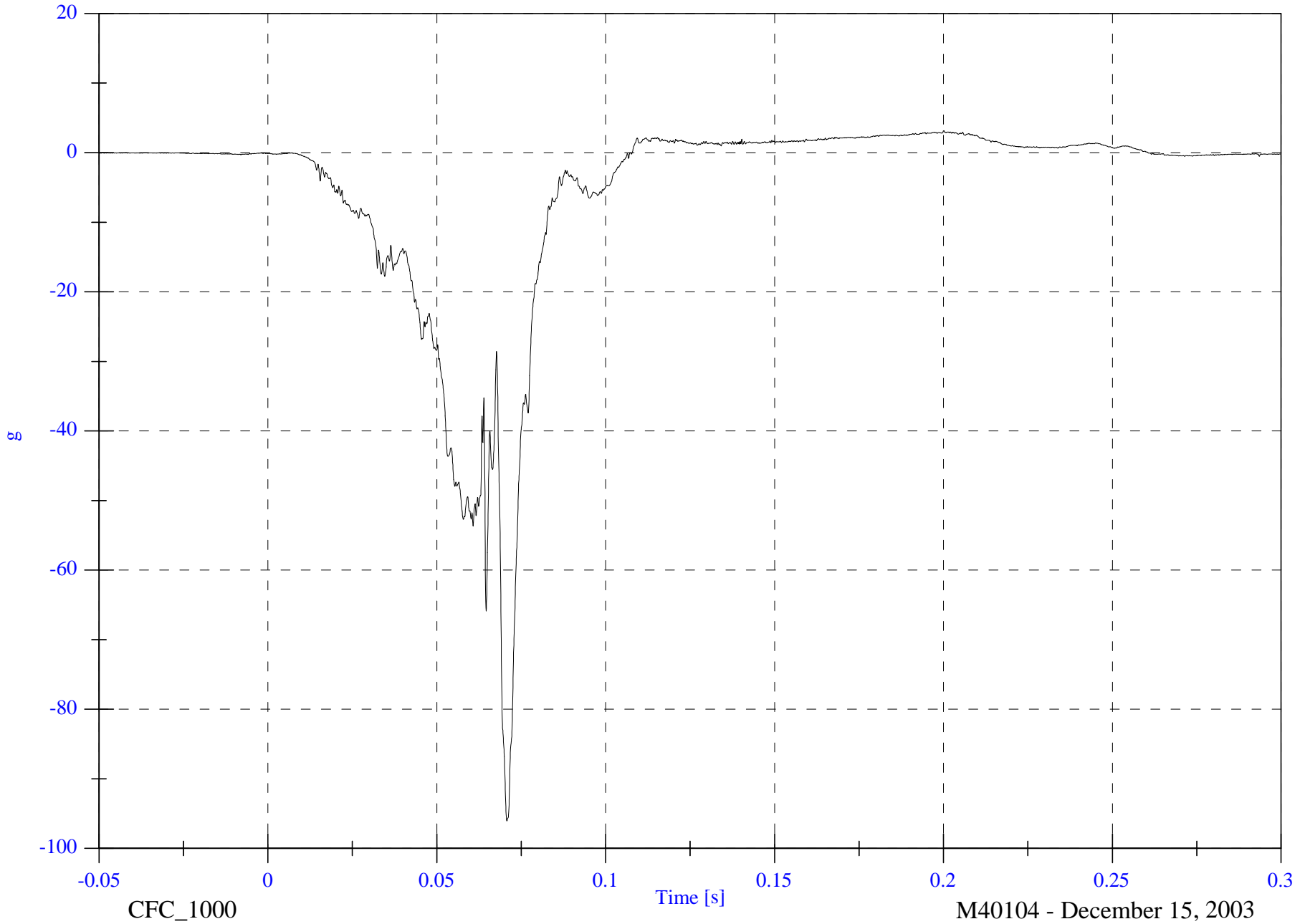
V1P2 Pelvic x

Max: 3.2 [g] at 0.200 [s]

Min: -96.1 [g] at 0.071 [s]

B-93

8642-NCAP-37



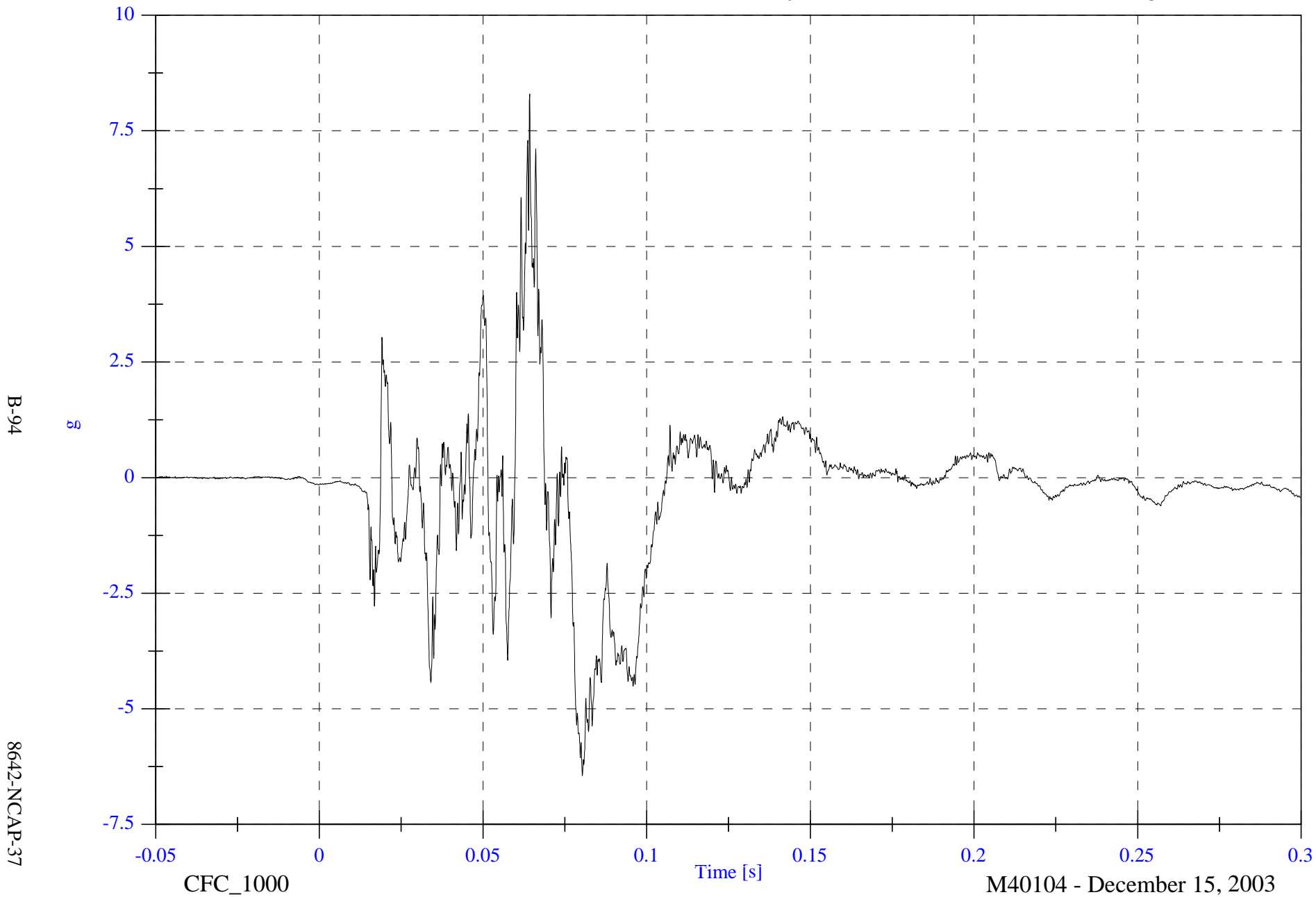
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Pelvic y

Max: 8.3 [g] at 0.064 [s]

Min: -6.4 [g] at 0.080 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

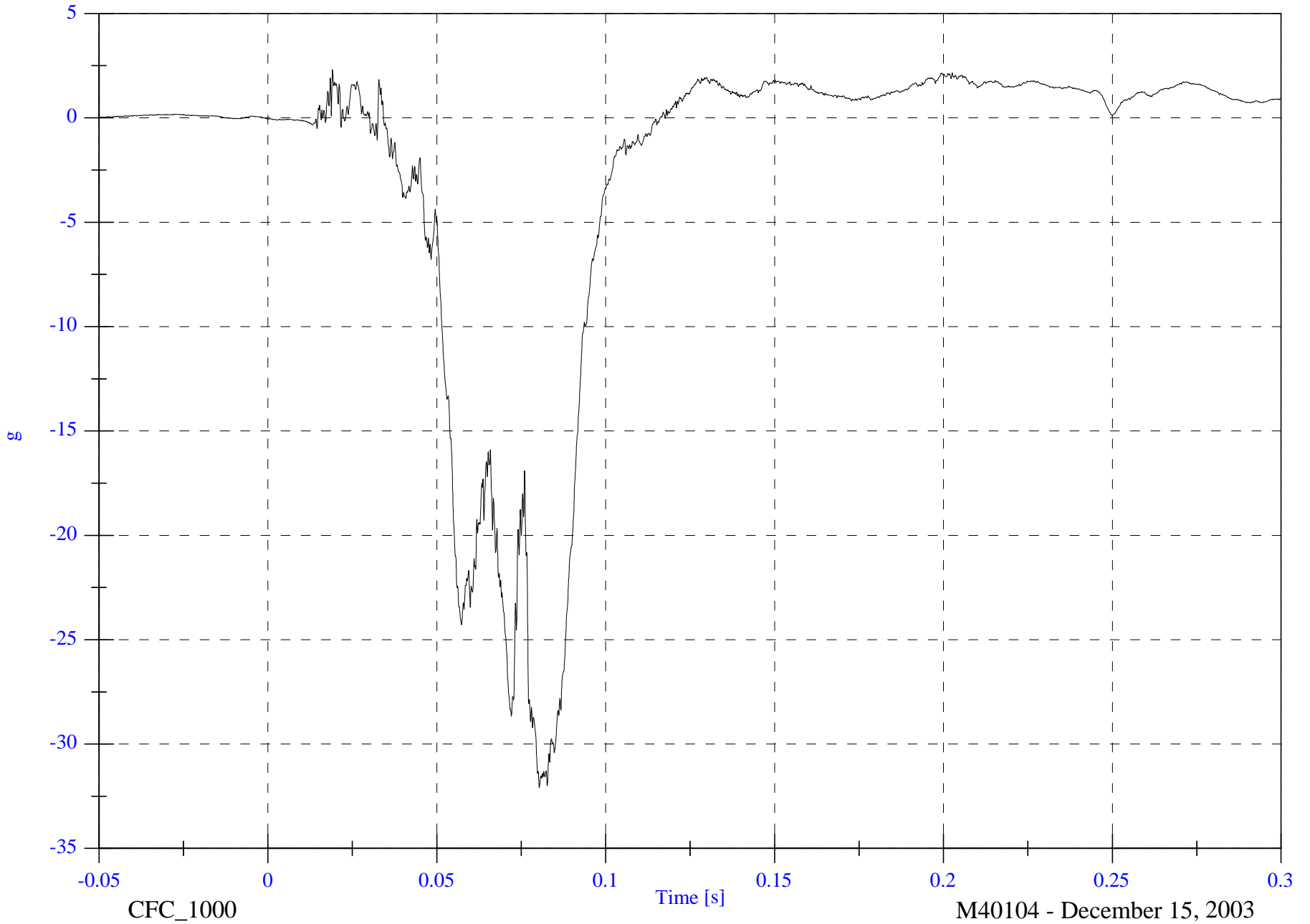
V1P2 Pelvic z

Max: 2.3 [g] at 0.019 [s]

Min: -32.1 [g] at 0.080 [s]

B-95

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Pelvic Resultant

Max: 99.5 [g] at 0.071 [s]

Min: 0.0 [g] at -0.049 [s]

B-96

8642-NCAP-37

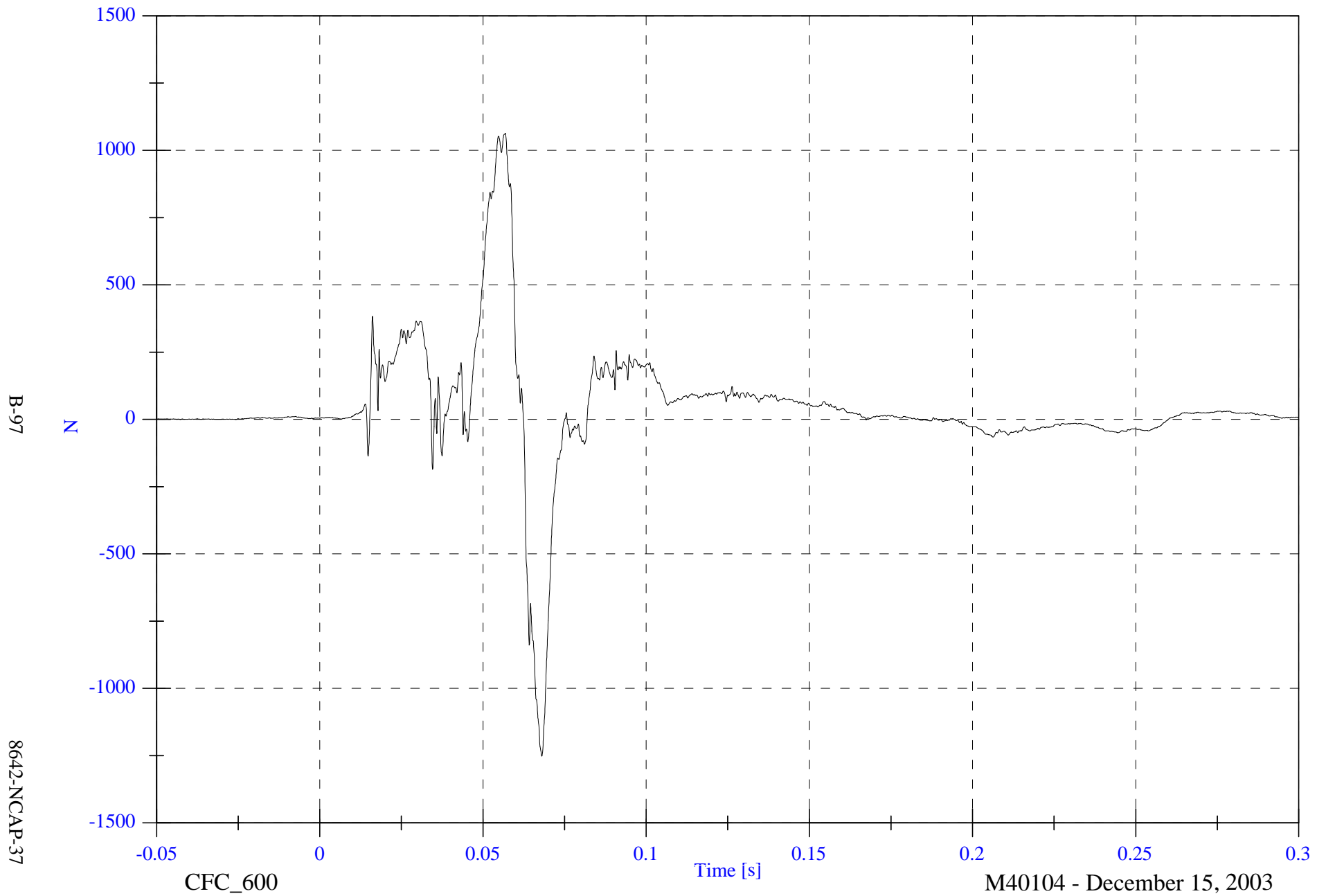


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1063.6 [N] at 0.057 [s]

Min: -1251.9 [N] at 0.068 [s]

V1P2 Left Femur z



B-97

8642-NCAP-37

CFC_600

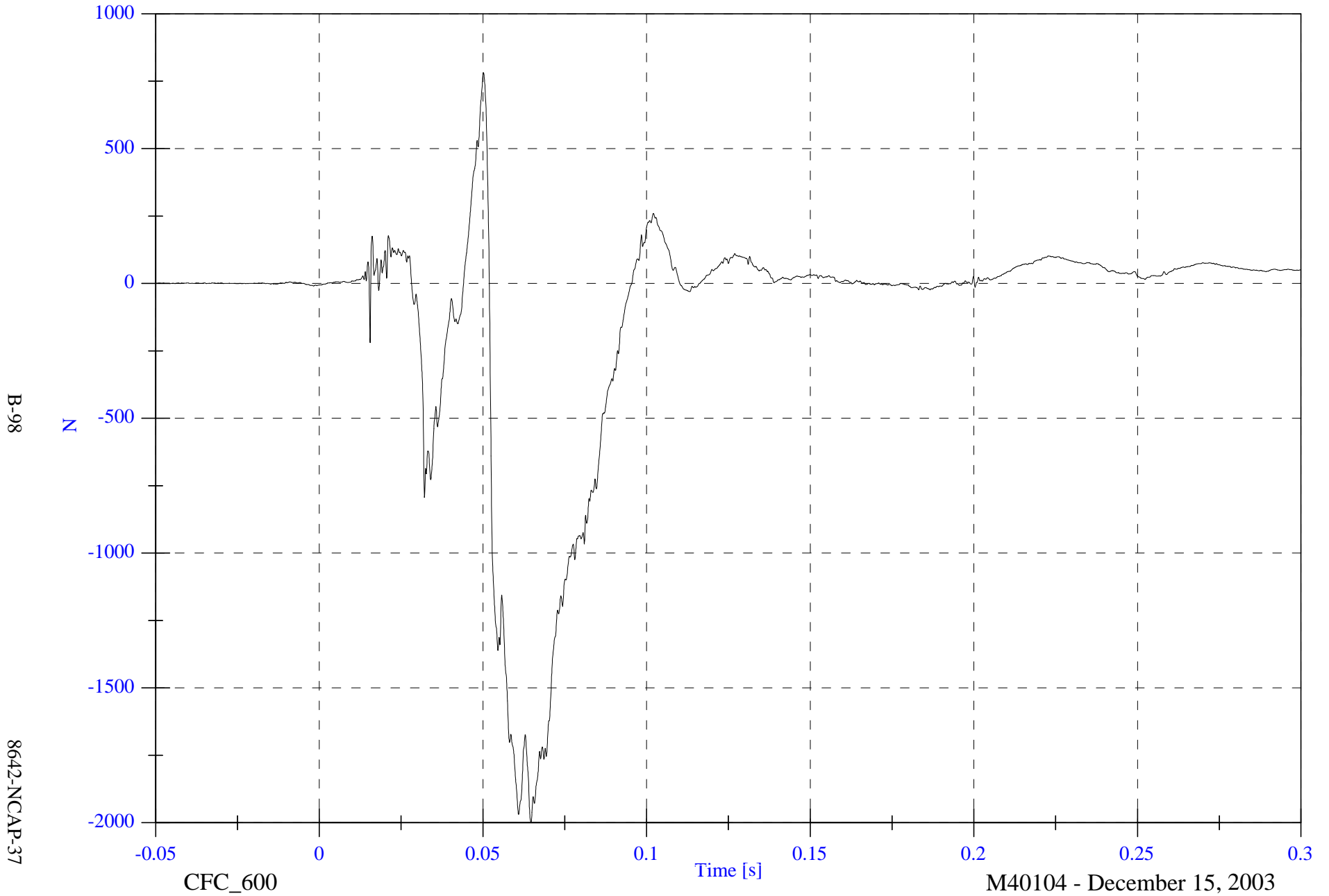
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 781.3 [N] at 0.050 [s]

Min: -1998.7 [N] at 0.065 [s]

V1P2 Right Femur z

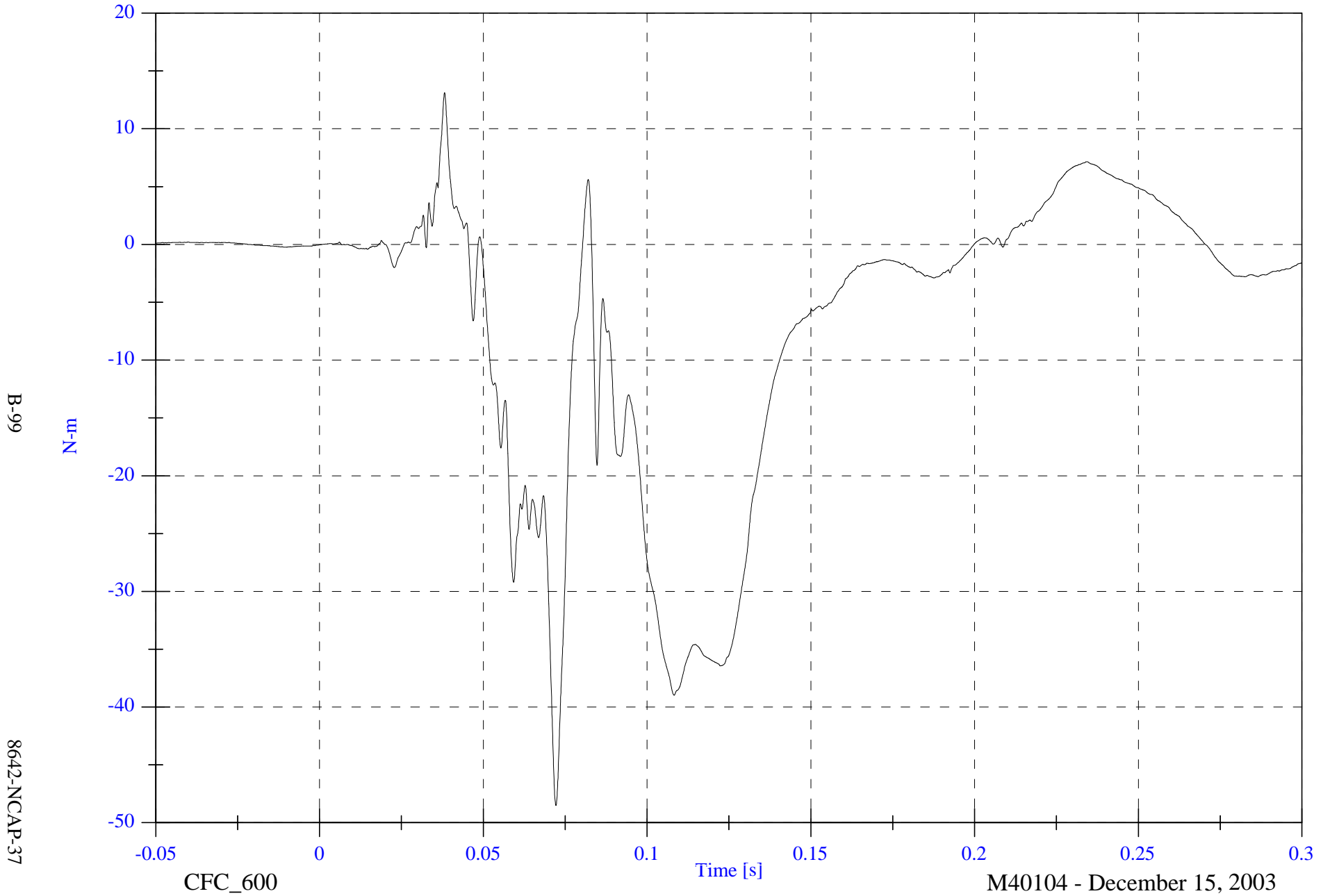


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Left Upper Tibia Mx

Max: 13.1 [N-m] at 0.038 [s]

Min: -48.5 [N-m] at 0.072 [s]



B-99

8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

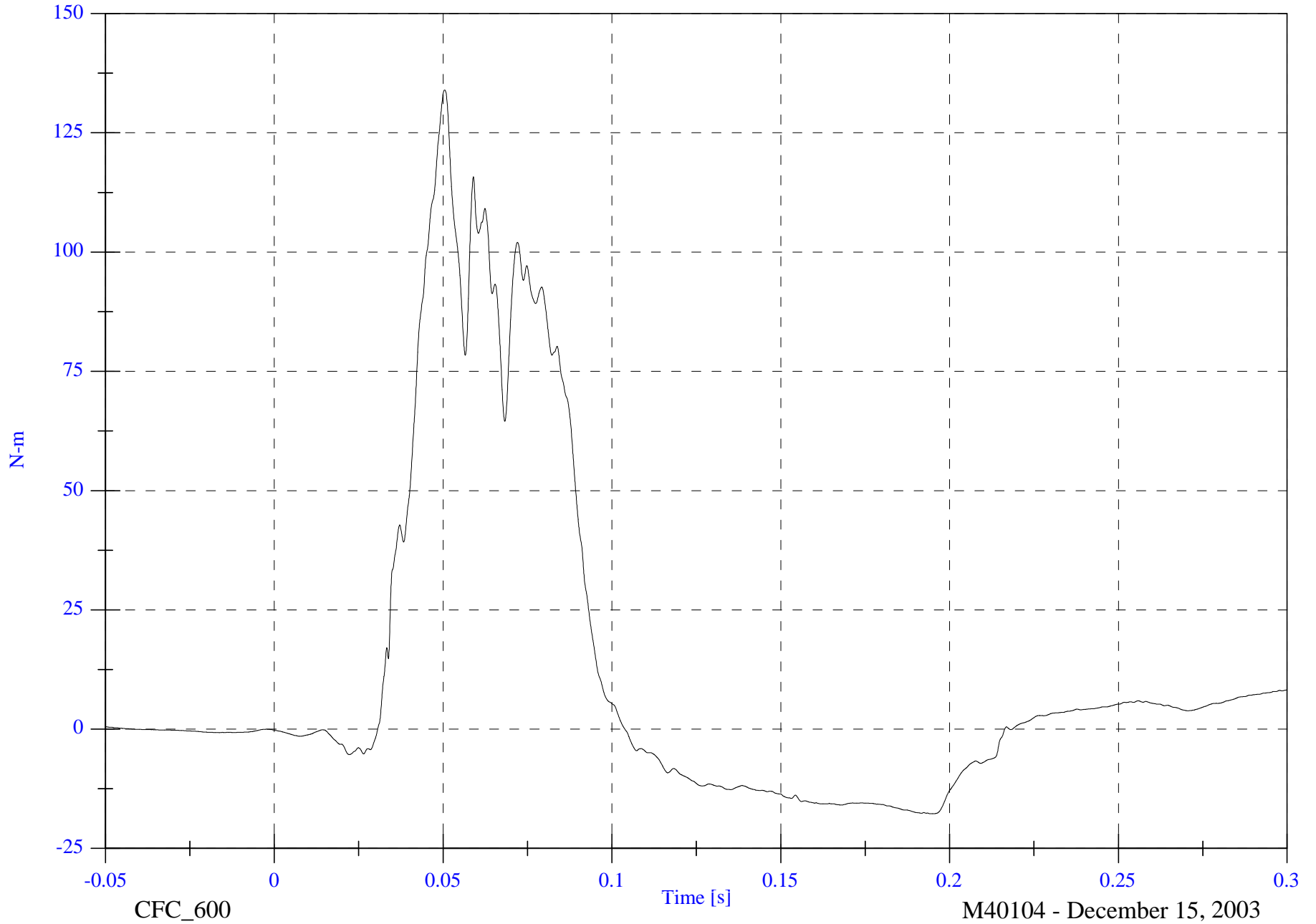
V1P2 Left Upper Tibia My

Max: 134.0 [N-m] at 0.050 [s]

Min: -17.7 [N-m] at 0.195 [s]

B-100

8642-NCAP-37

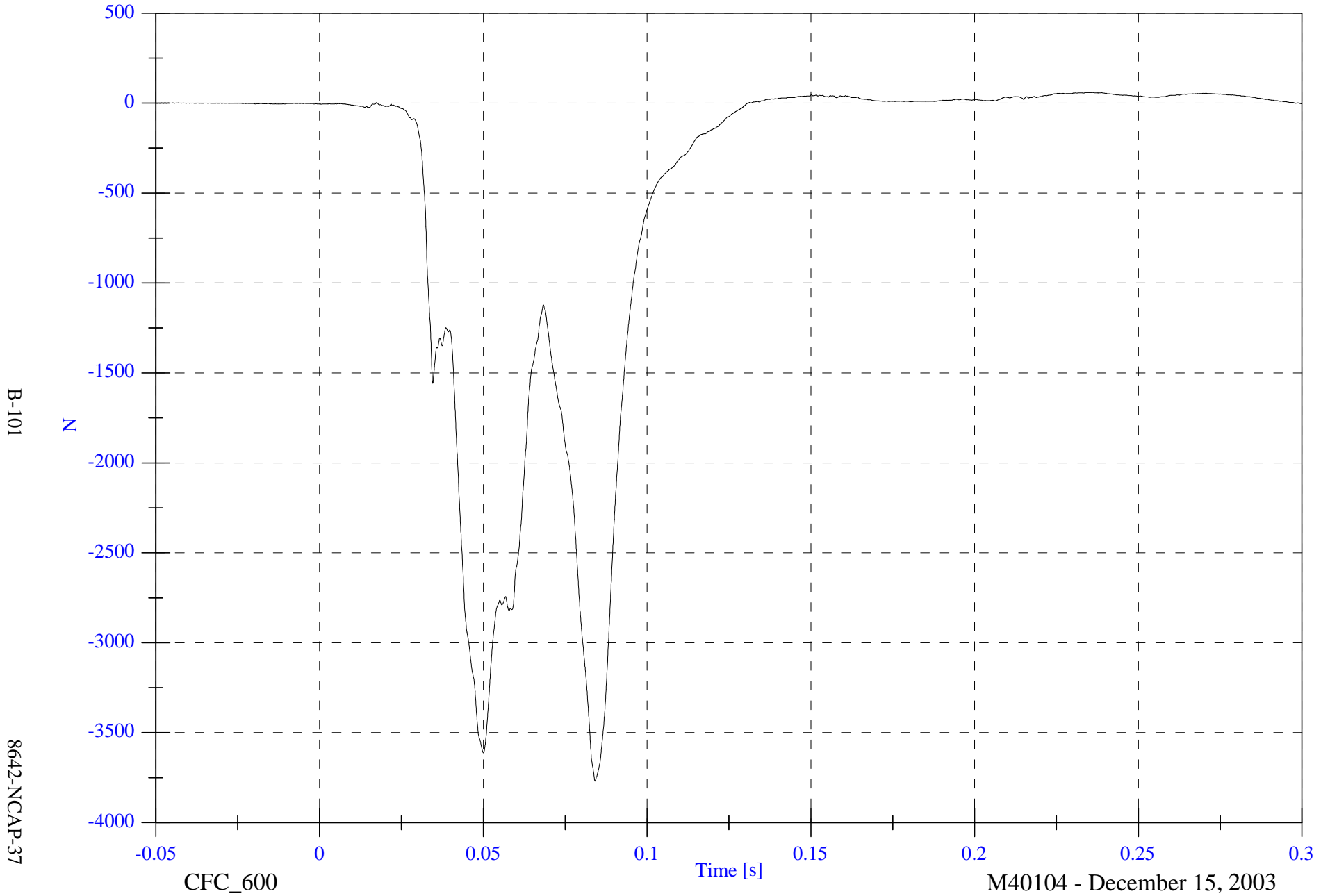


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Left Lower Tibia Fz

Max: 58.7 [N] at 0.236 [s]

Min: -3769.3 [N] at 0.084 [s]



B-101

8642-NCAP-37

CFC_600

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

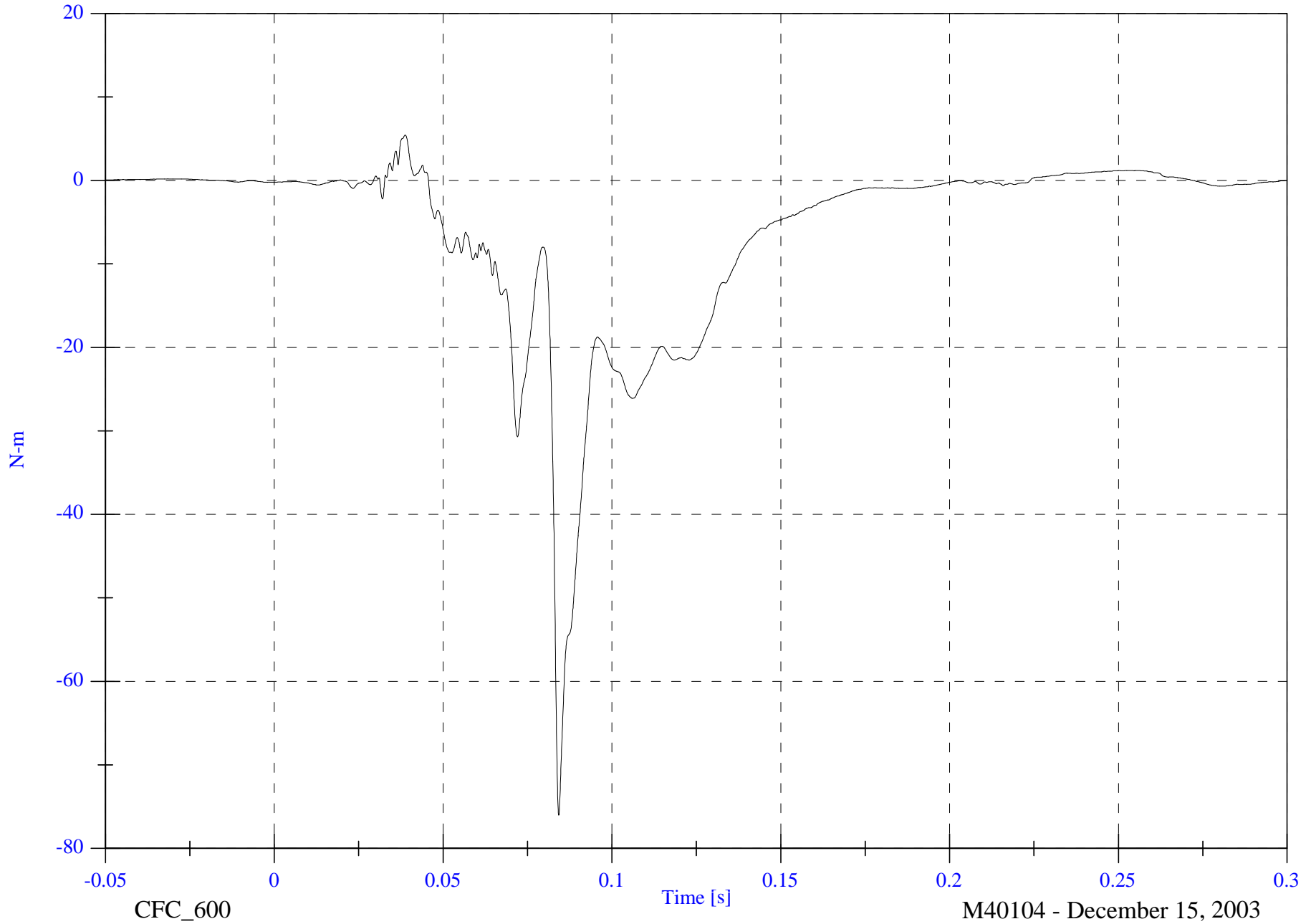
VIP2 Left Lower Tibia Mx

Max: 5.5 [N-m] at 0.039 [s]

Min: -76.0 [N-m] at 0.084 [s]

B-102

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

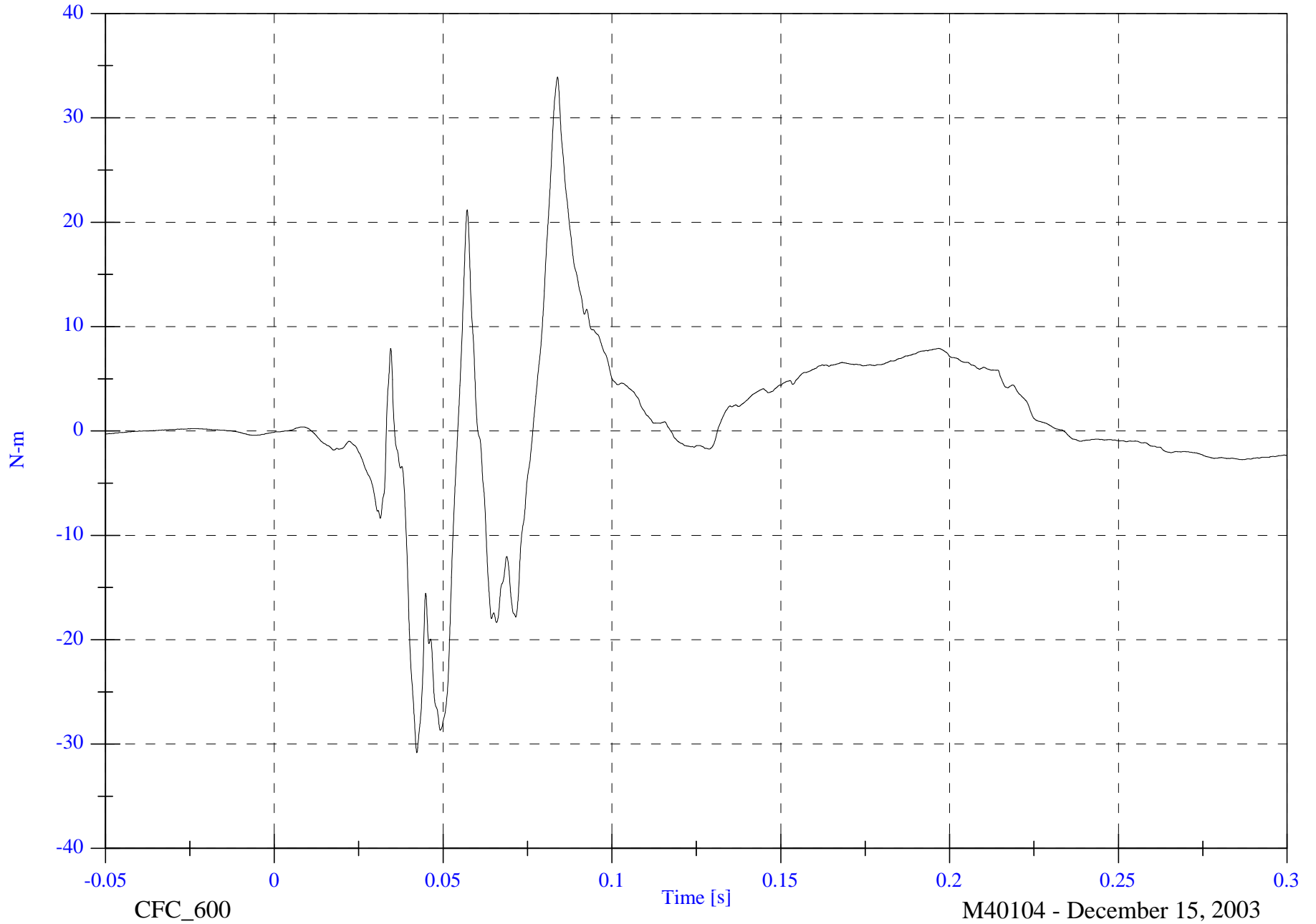
V1P2 Left Lower Tibia My

Max: 33.9 [N-m] at 0.084 [s]

Min: -30.8 [N-m] at 0.042 [s]

B-103

8642-NCAP-37



CFC_600

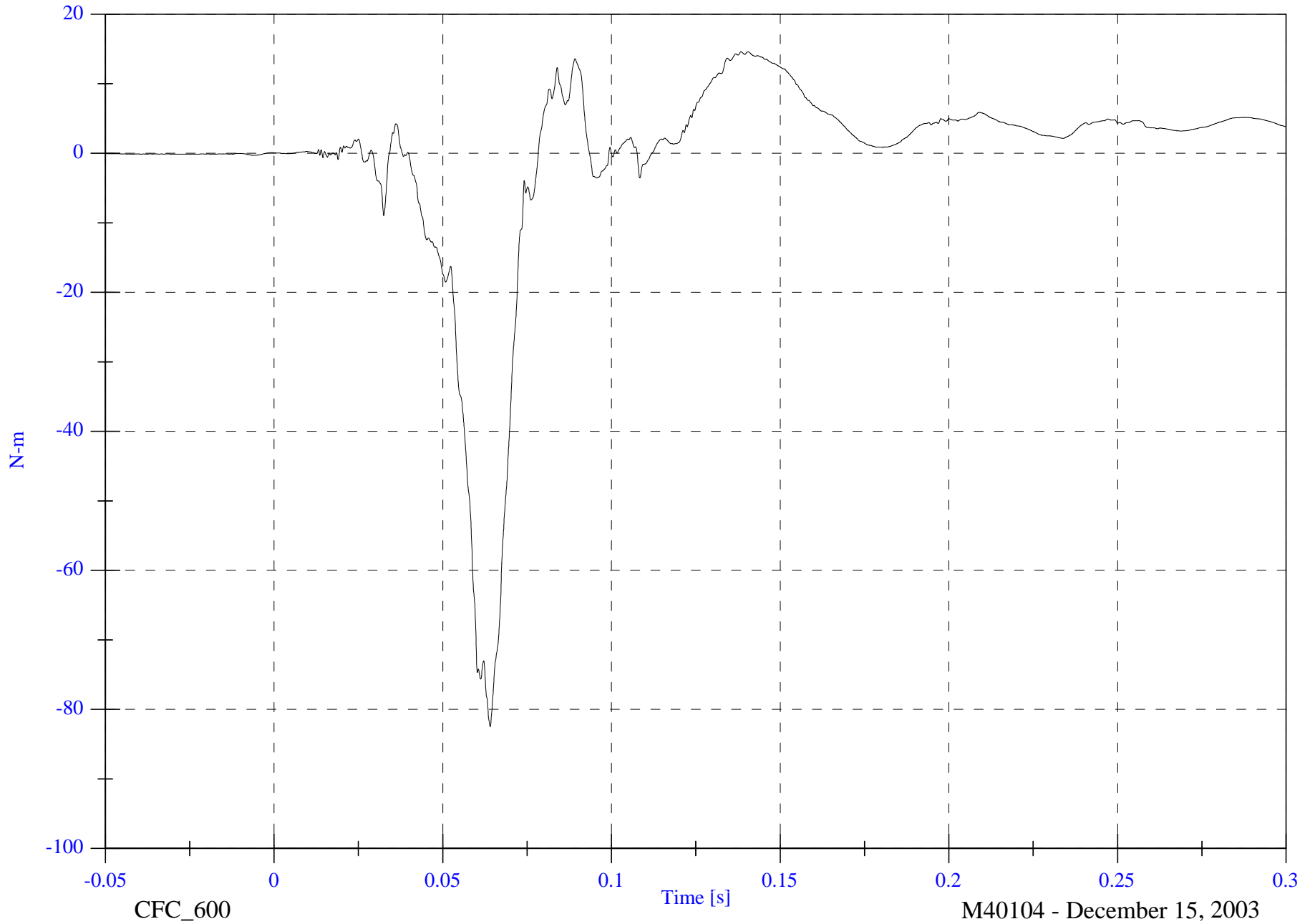
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 14.6 [N-m] at 0.138 [s]

Min: -82.5 [N-m] at 0.064 [s]

V1P2 Right Upper Tibia Mx



B-104

8642-NCAP-37

CFC_600

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

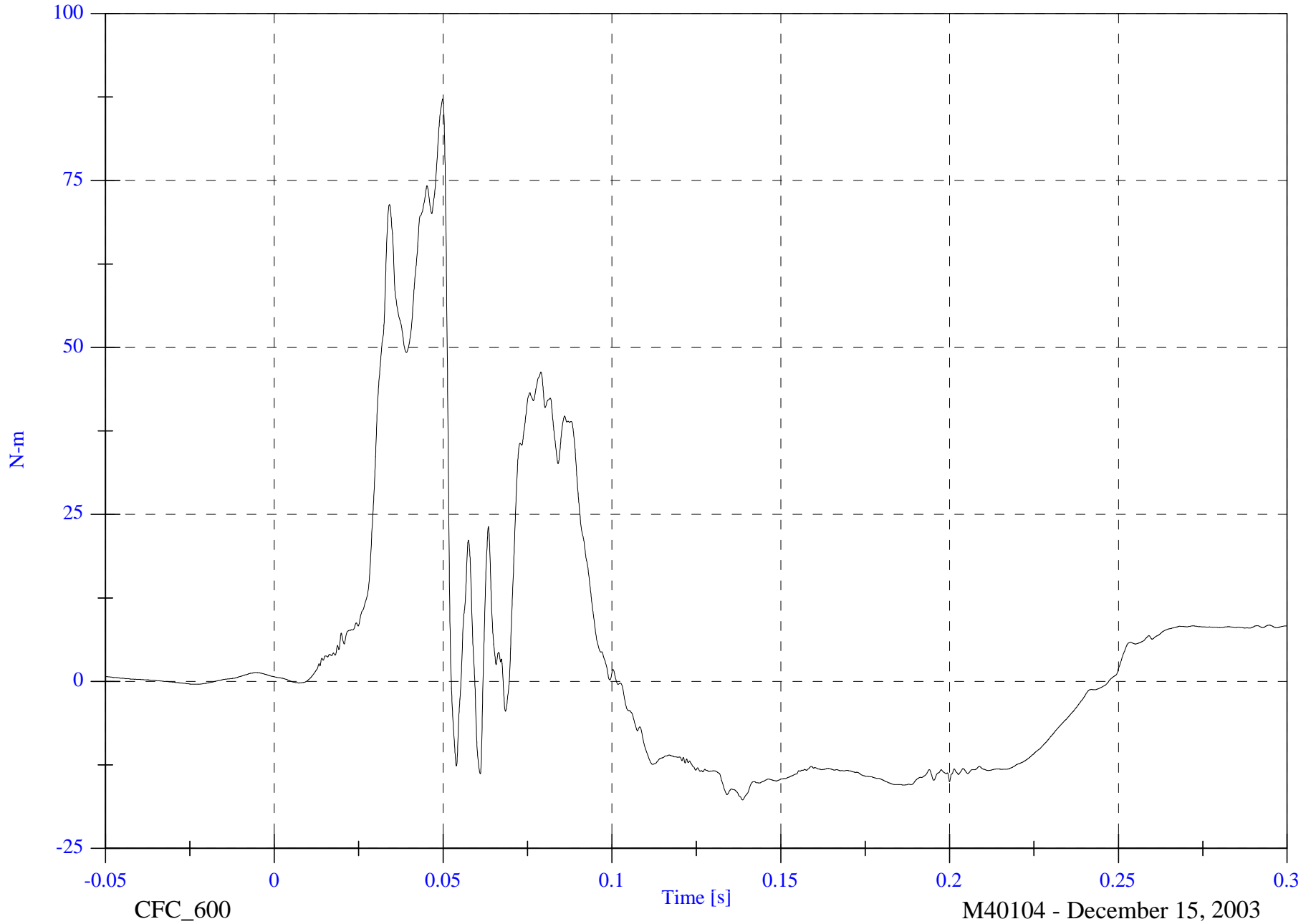
V1P2 Right Upper Tibia My

Max: 87.2 [N-m] at 0.050 [s]

Min: -17.7 [N-m] at 0.139 [s]

B-105

8642-NCAP-37



CFC_600

Time [s]

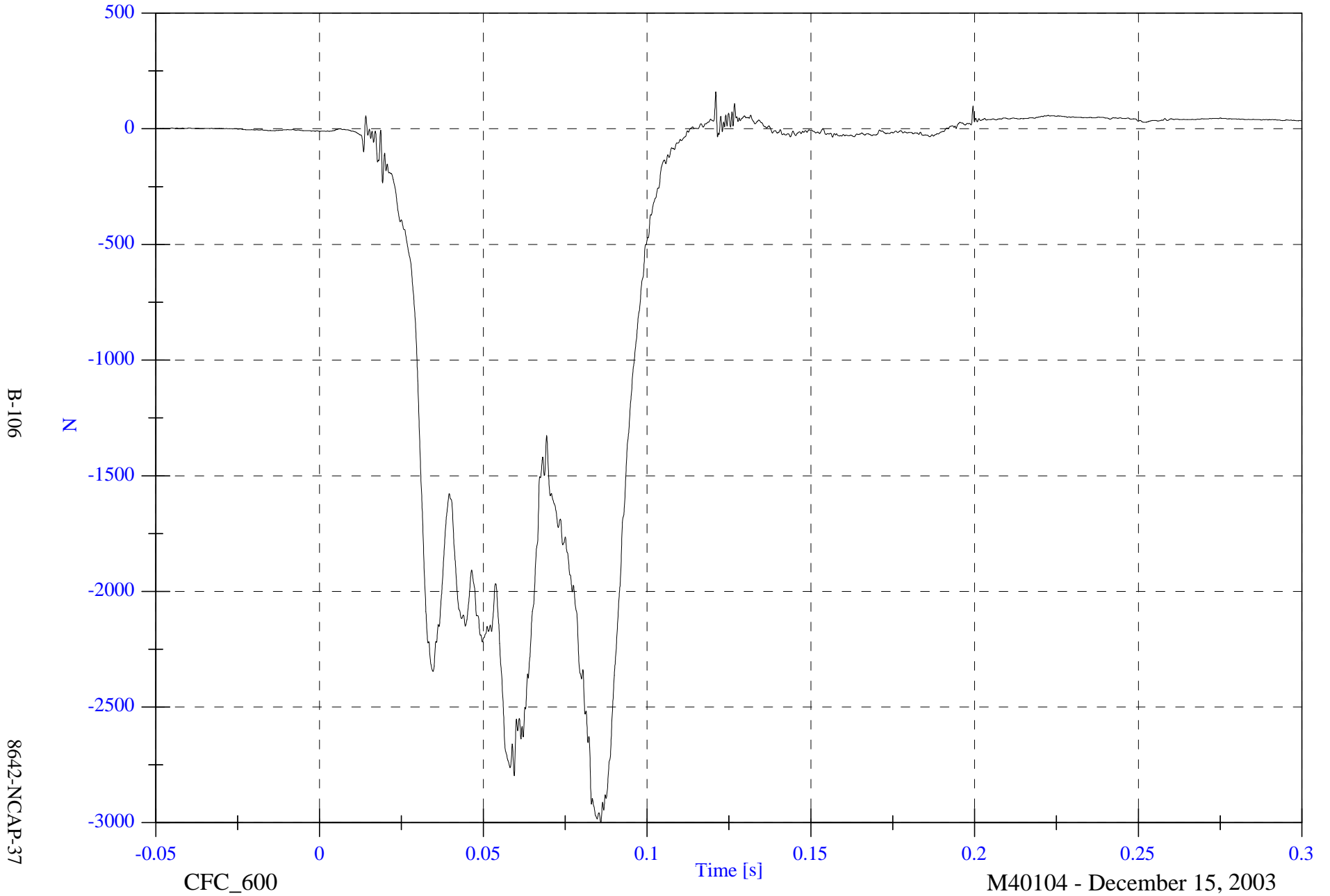
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Right Lower Tibia Fz

Max: 159.5 [N] at 0.121 [s]

Min: -2999.7 [N] at 0.086 [s]



B-106

8642-NCAP-37

CFC_600

Time [s]

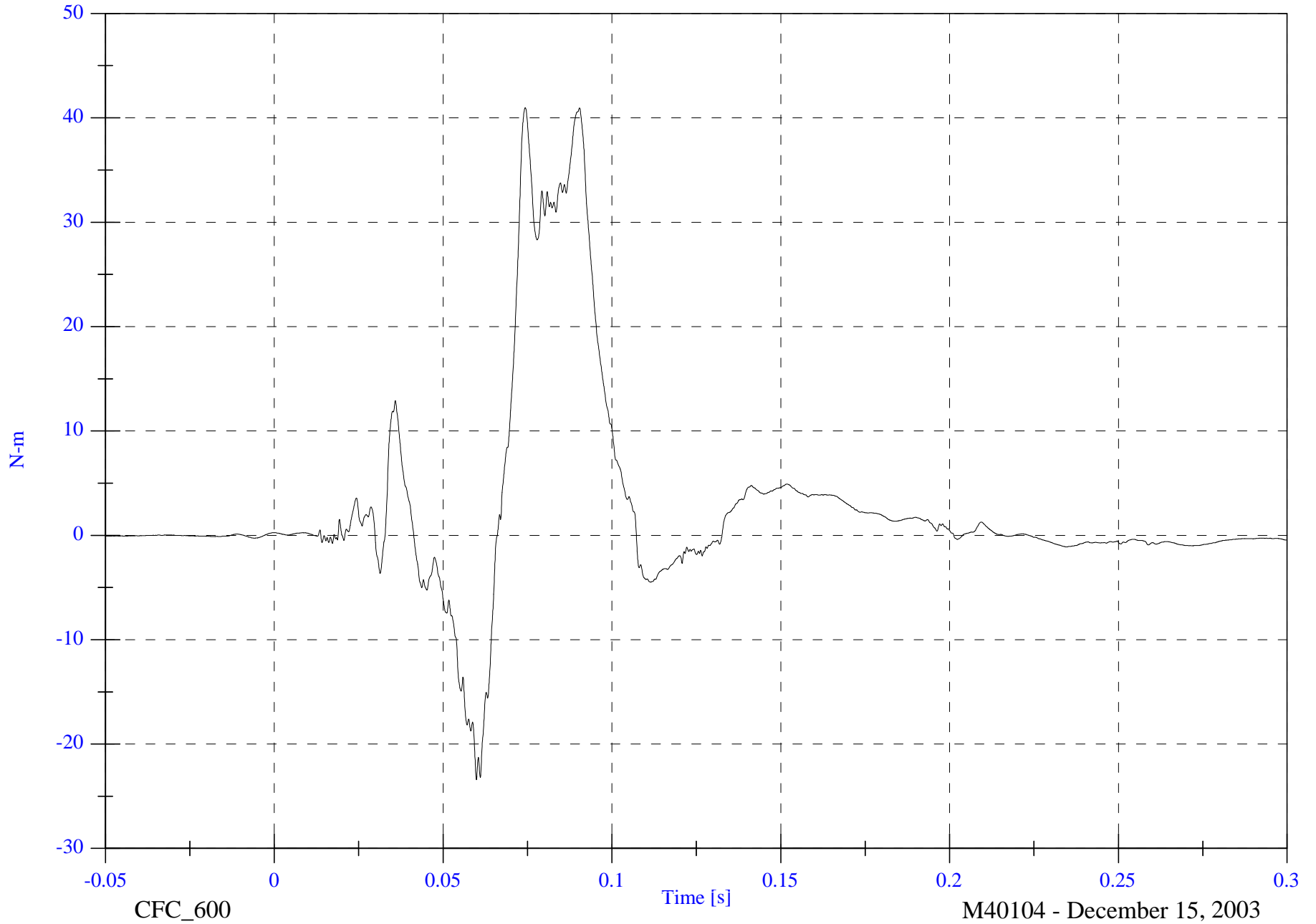
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 41.0 [N-m] at 0.074 [s]

Min: -23.4 [N-m] at 0.060 [s]

V1P2 Right Lower Tibia Mx



B-107

8642-NCAP-37

CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

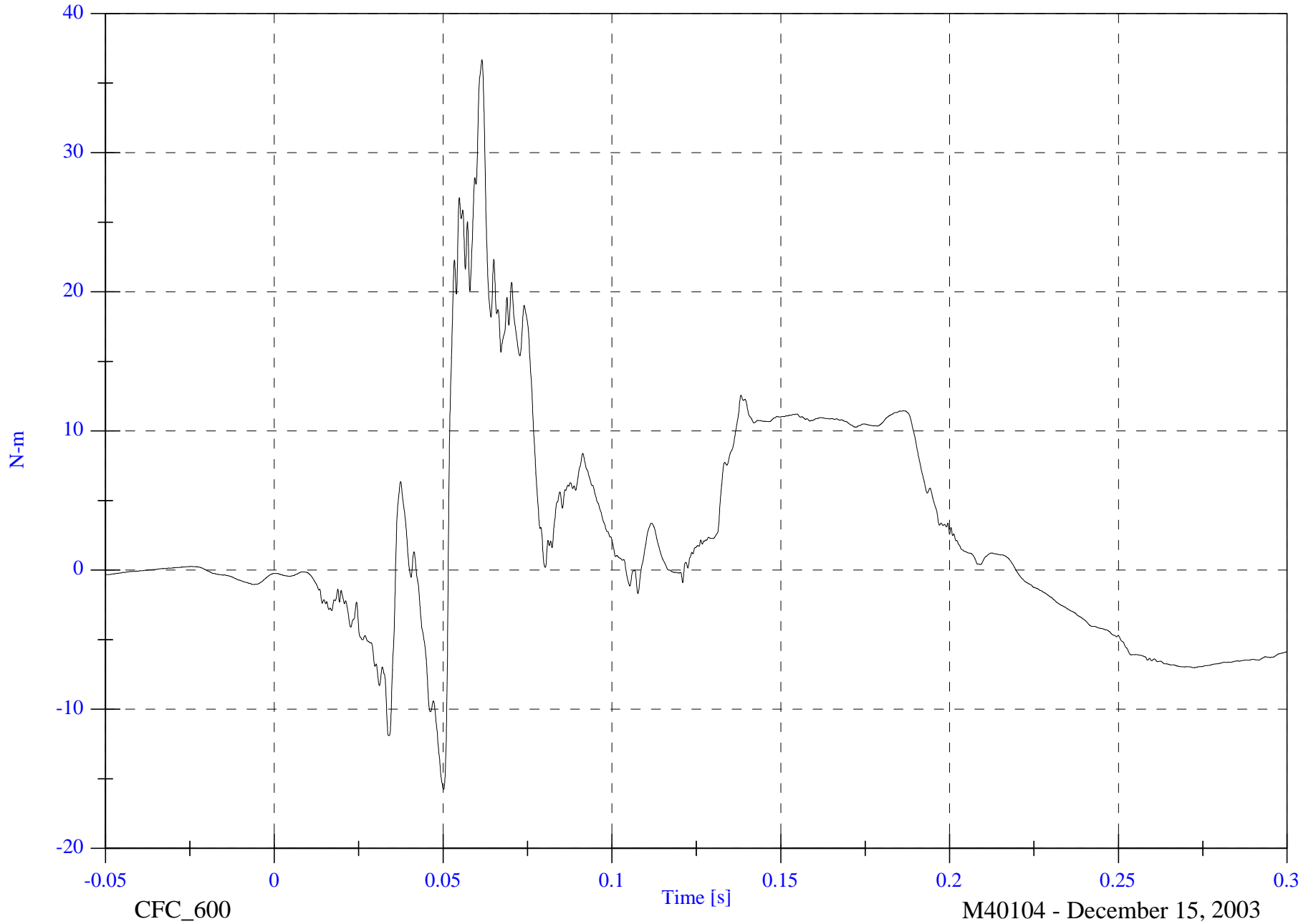
V1P2 Right Lower Tibia My

Max: 36.7 [N-m] at 0.061 [s]

Min: -15.8 [N-m] at 0.050 [s]

B-108

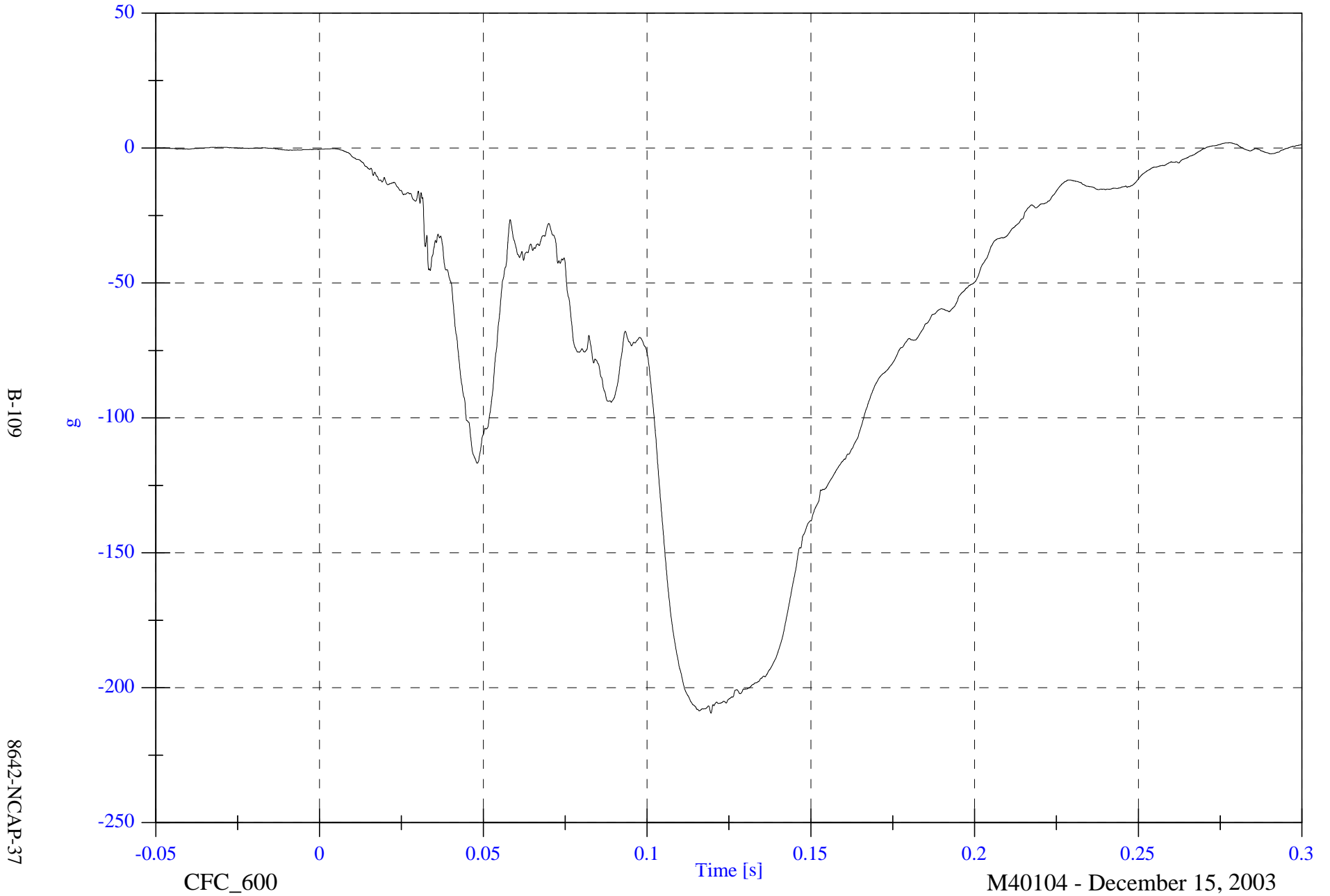
8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 2.0 [g] at 0.278 [s]
Min: -209.4 [g] at 0.120 [s]

V1P2 Left Foot Aft x



B-109

8642-NCAP-37

CFC_600

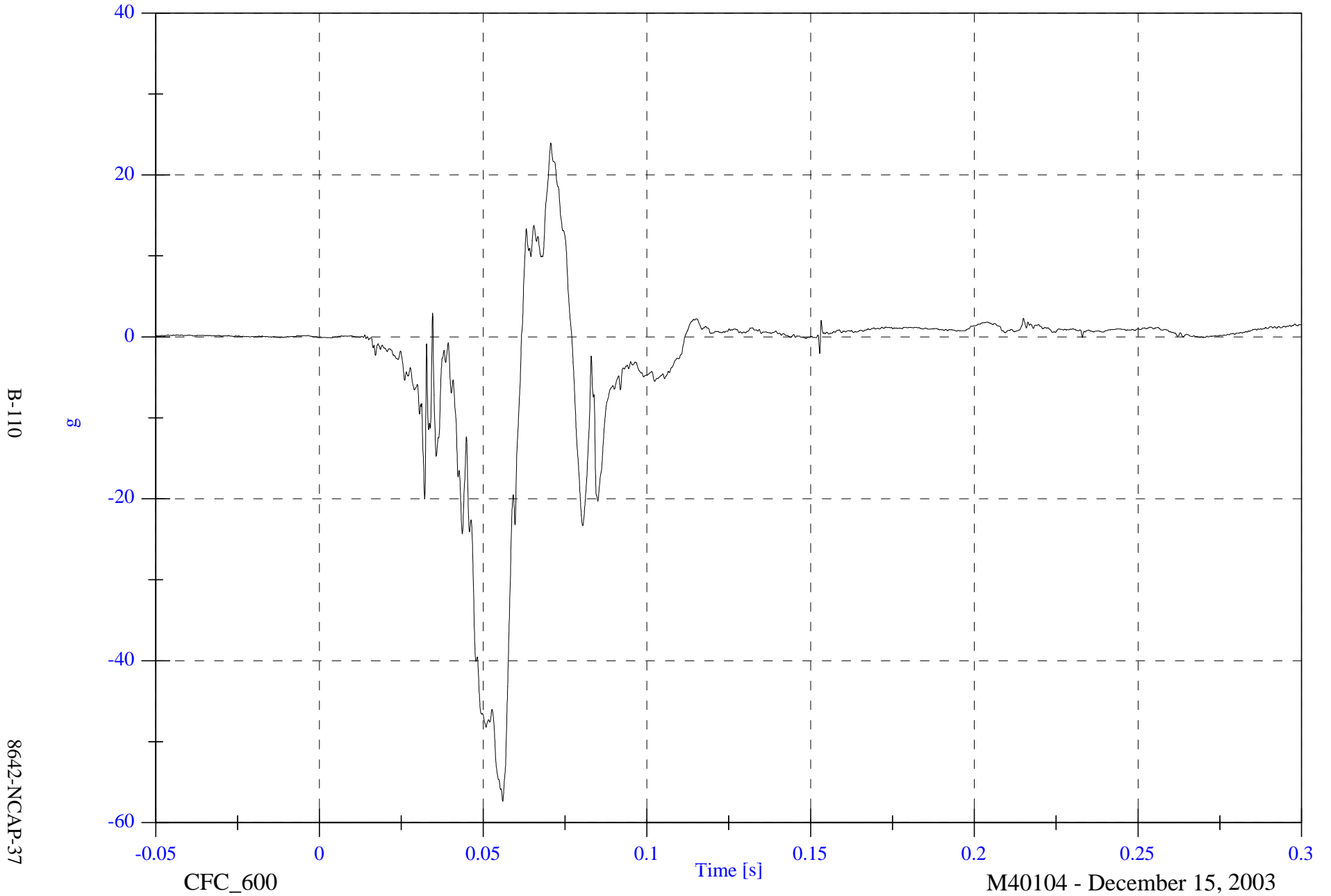
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 24.0 [g] at 0.071 [s]

Min: -57.3 [g] at 0.056 [s]

V1P2 Left Foot Aft z

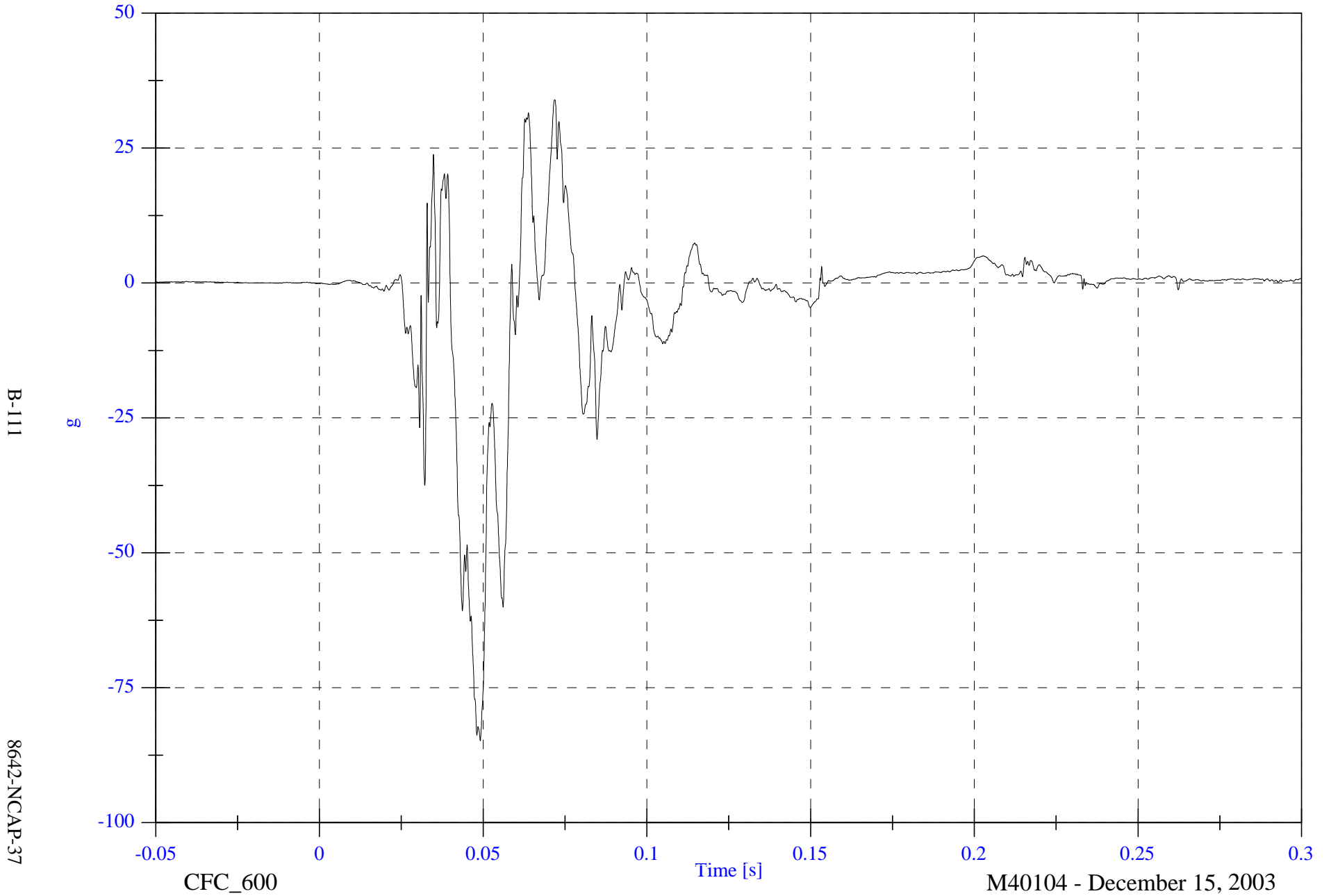


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 33.9 [g] at 0.072 [s]

Min: -84.8 [g] at 0.049 [s]

V1P2 Left Foot Fore z

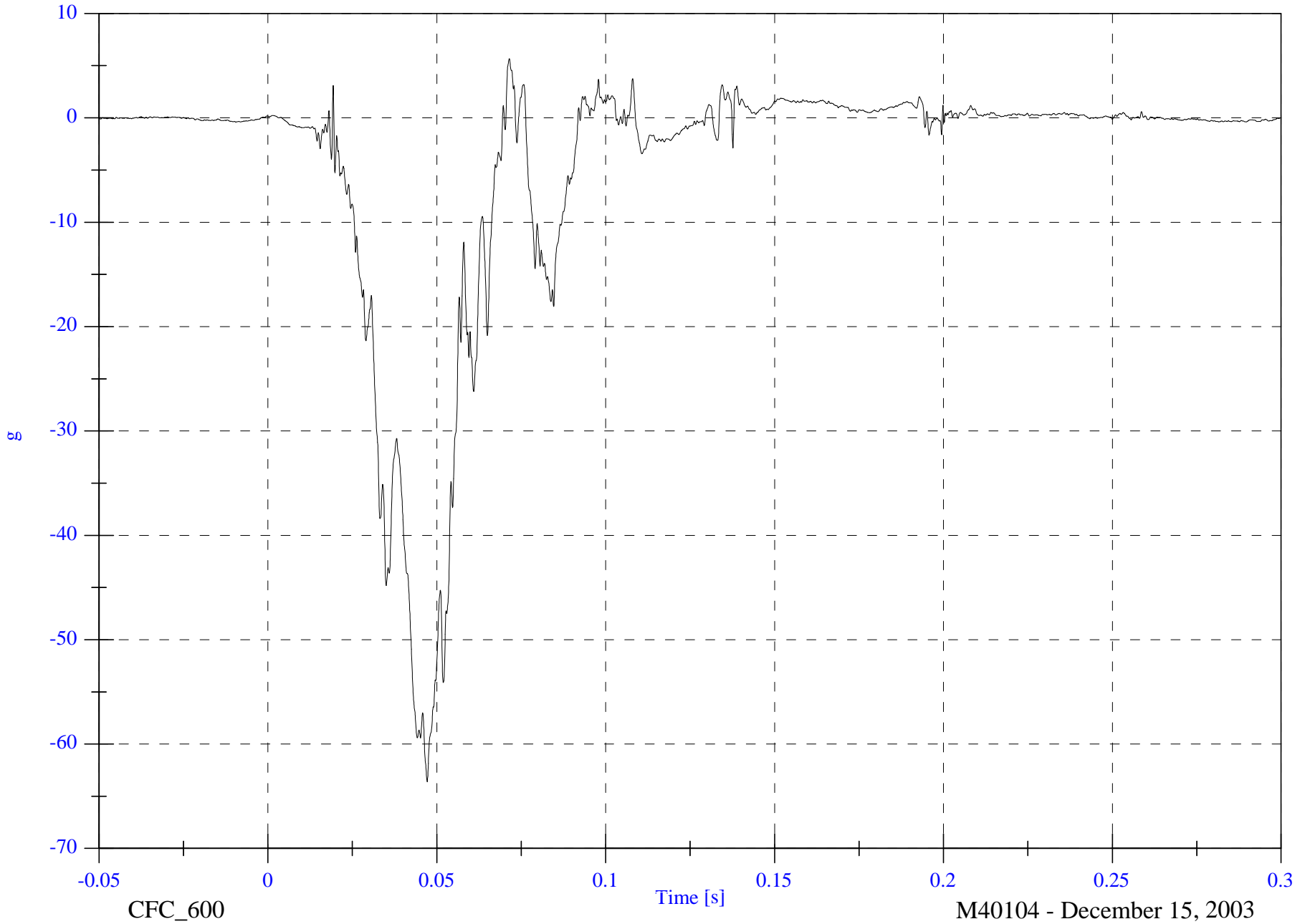


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 5.7 [g] at 0.071 [s]

Min: -63.6 [g] at 0.047 [s]

V1P2 Right Foot Aft x



B-112

8642-NCAP-37

CFC_600

Time [s]

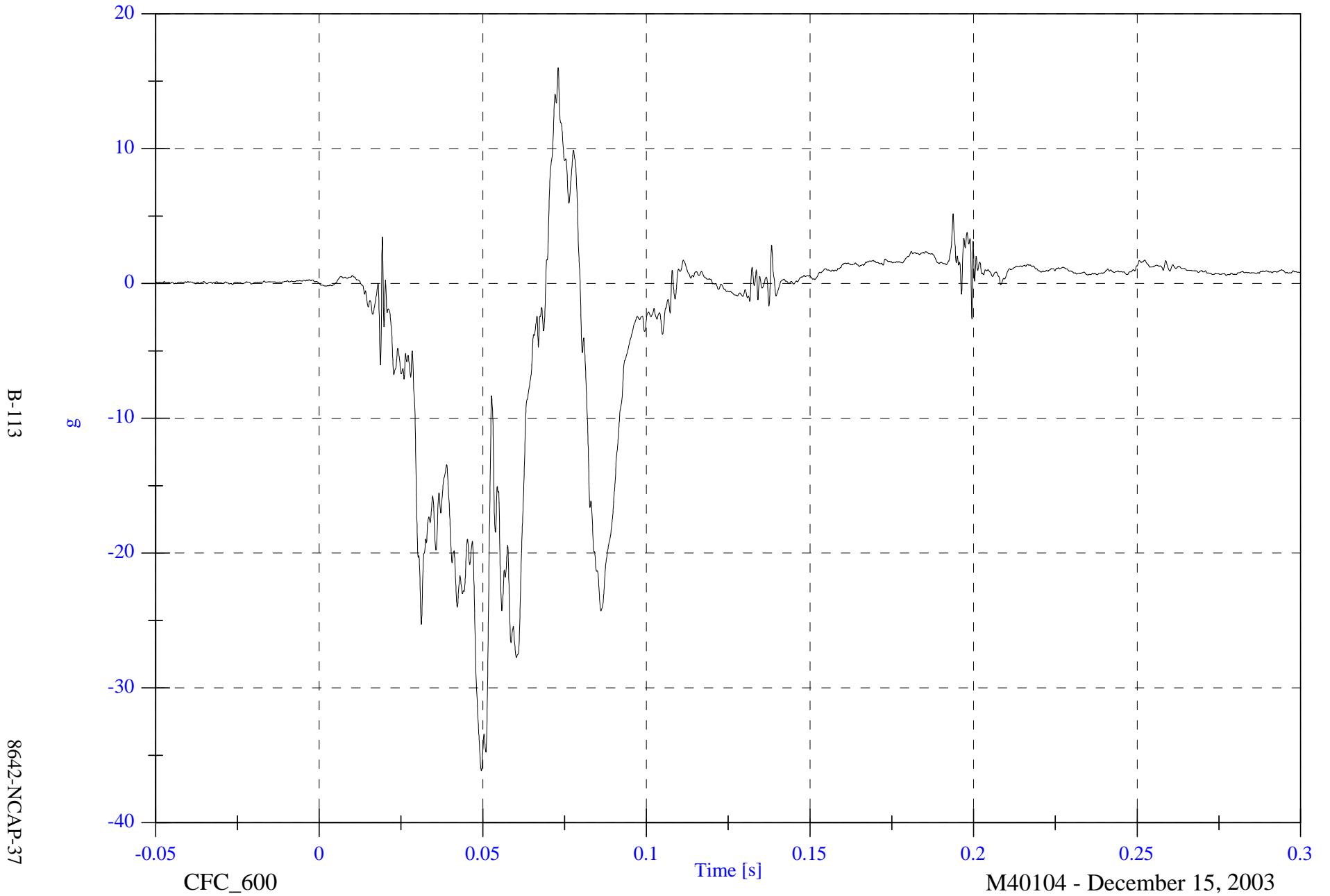
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 16.0 [g] at 0.073 [s]

Min: -36.2 [g] at 0.050 [s]

V1P2 Right Foot Aft z



2004 NCAP Test 1 2004 Chevrolet Malibu

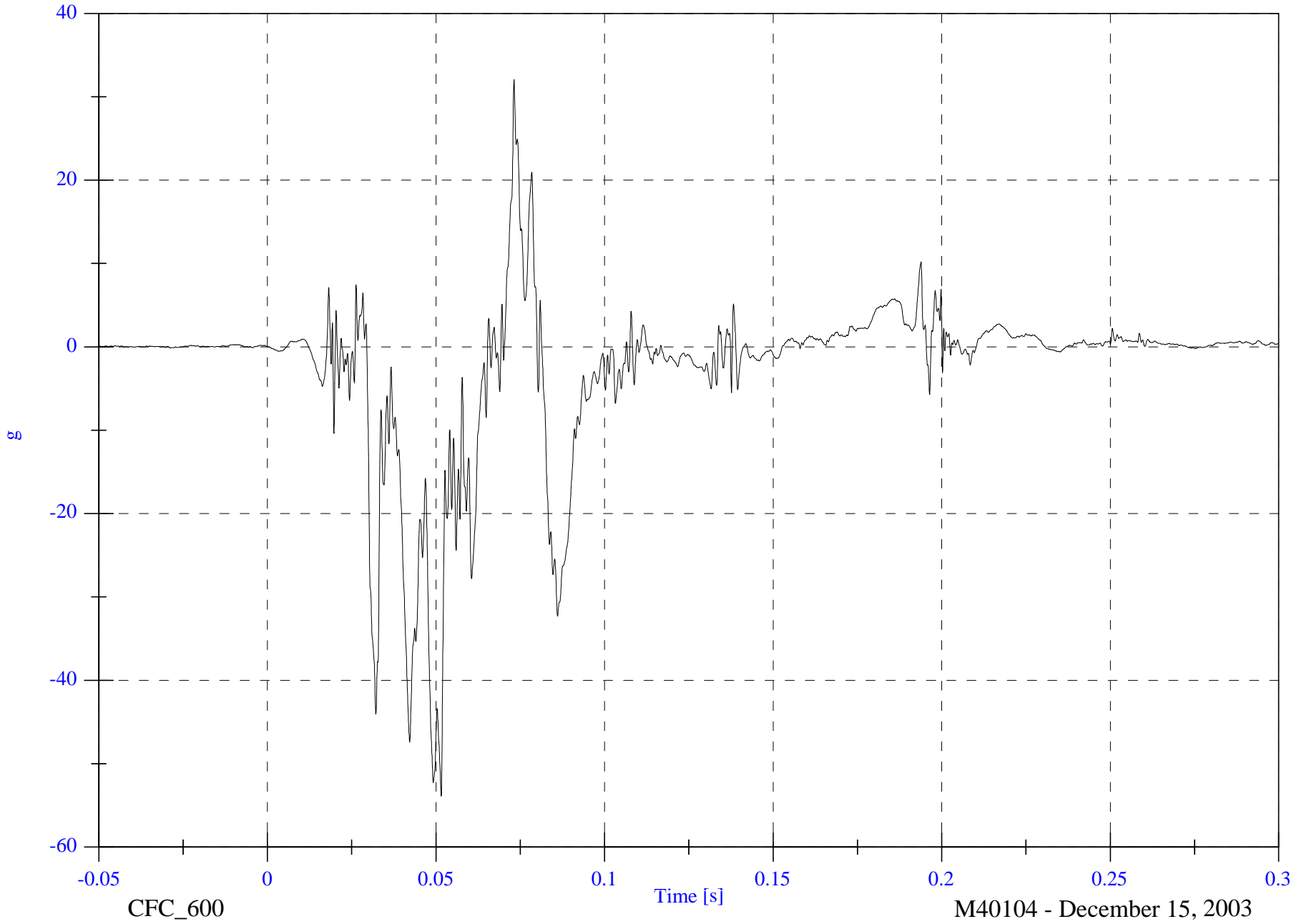
V1P2 Right Foot Fore z

Max: 32.0 [g] at 0.073 [s]

Min: -53.9 [g] at 0.052 [s]

B-114

8642-NCAP-37

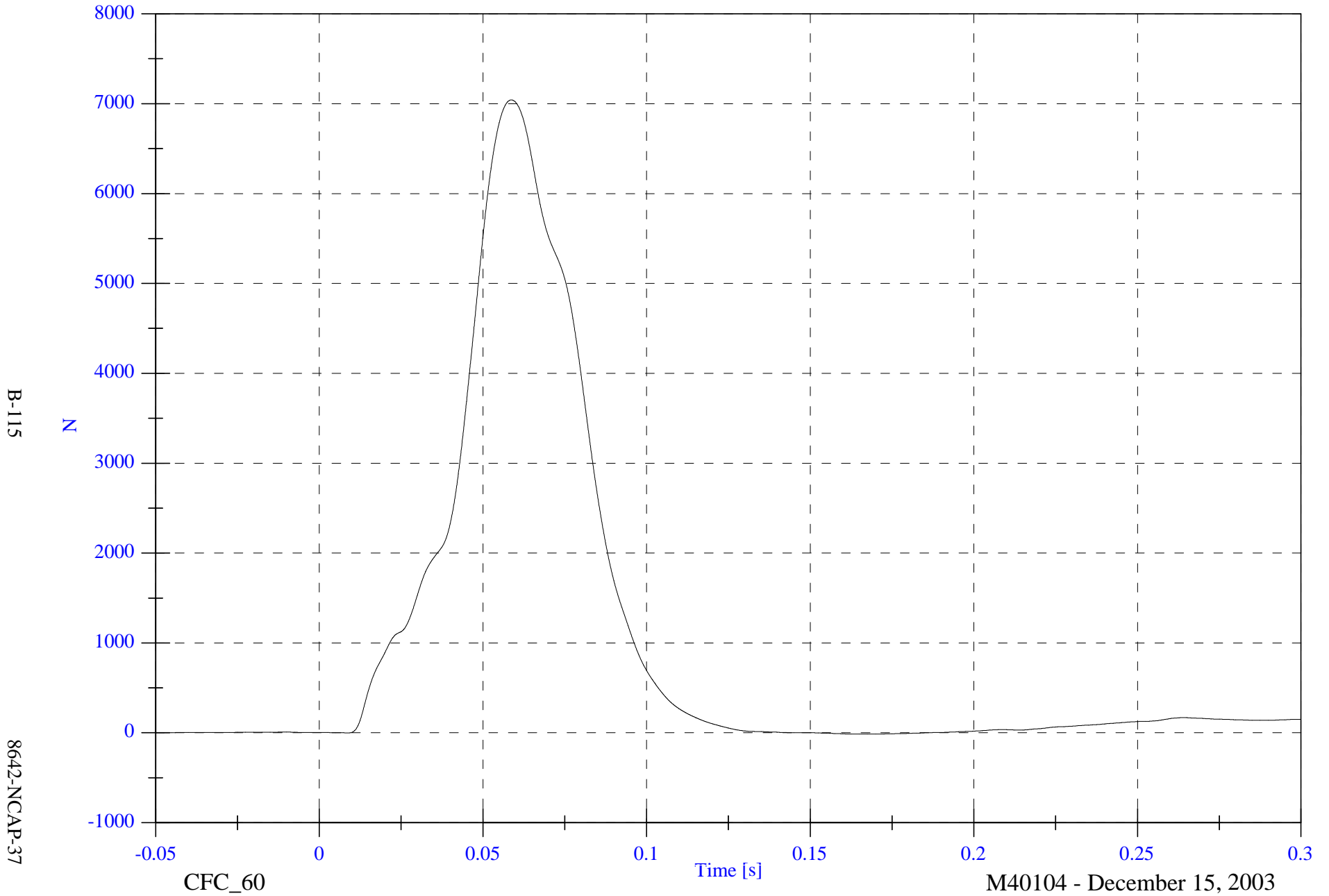


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P2 Lap Belt

Max: 7041.5 [N] at 0.059 [s]

Min: -12.8 [N] at 0.164 [s]



B-115

8642-NCAP-37

CFC_60

Time [s]

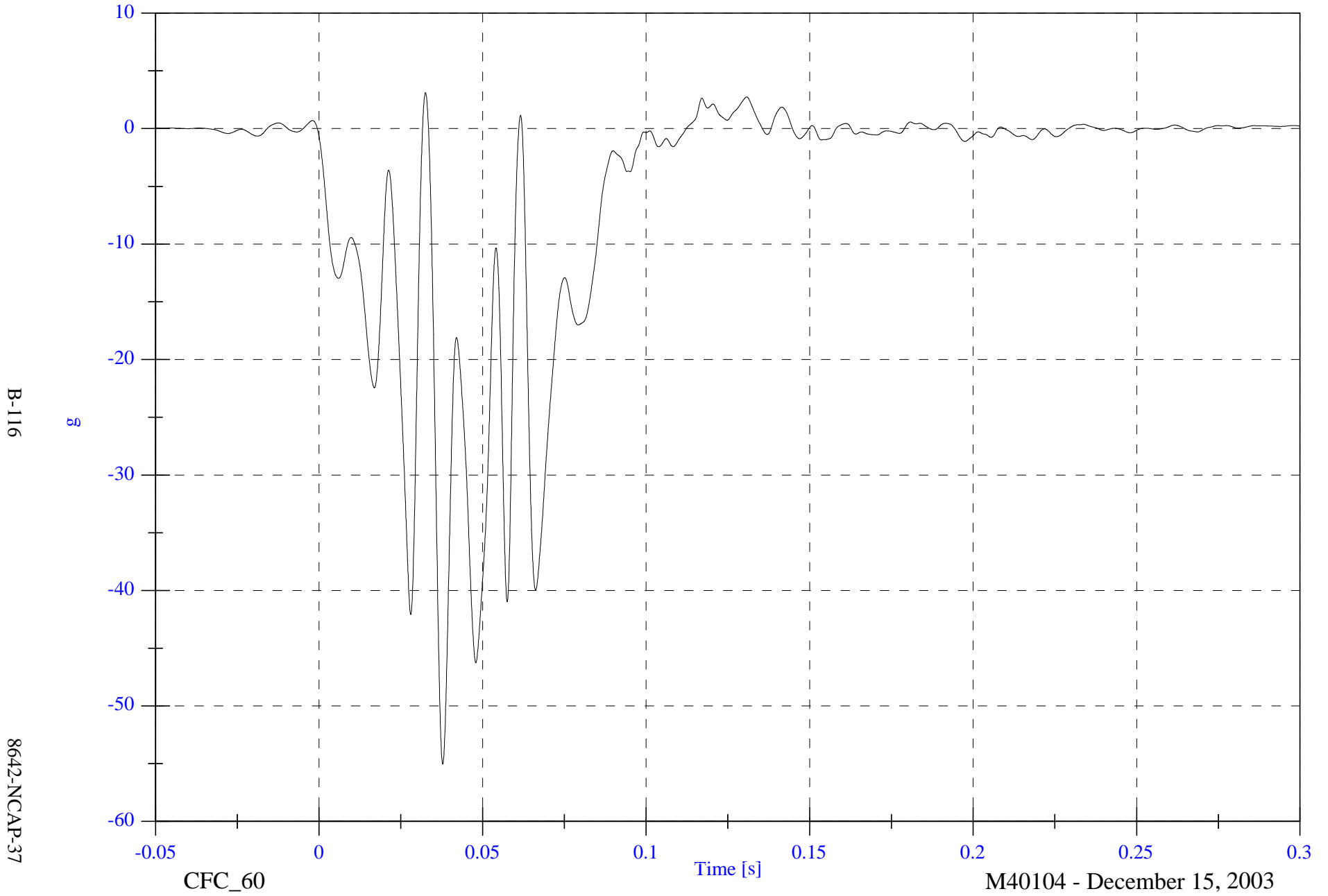
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Left Rear #1x

Max: 3.1 [g] at 0.033 [s]

Min: -55.0 [g] at 0.038 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

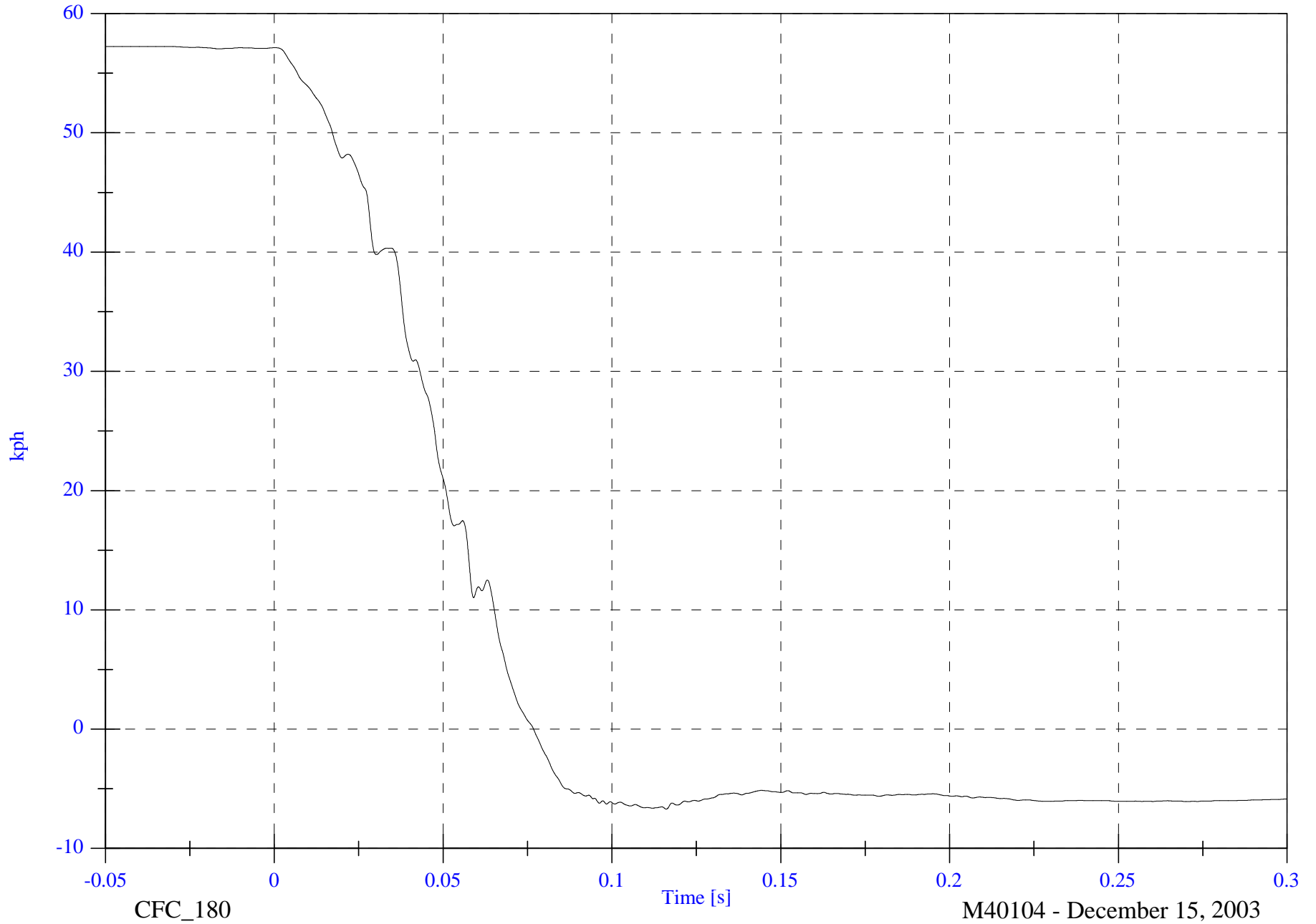
Max: 57.2 [kph] at -0.035 [s]

V1 Left Rear #1x Velocity

Min: -6.7 [kph] at 0.116 [s]

B-117

8642-NCAP-37



CFC_180

Time [s]

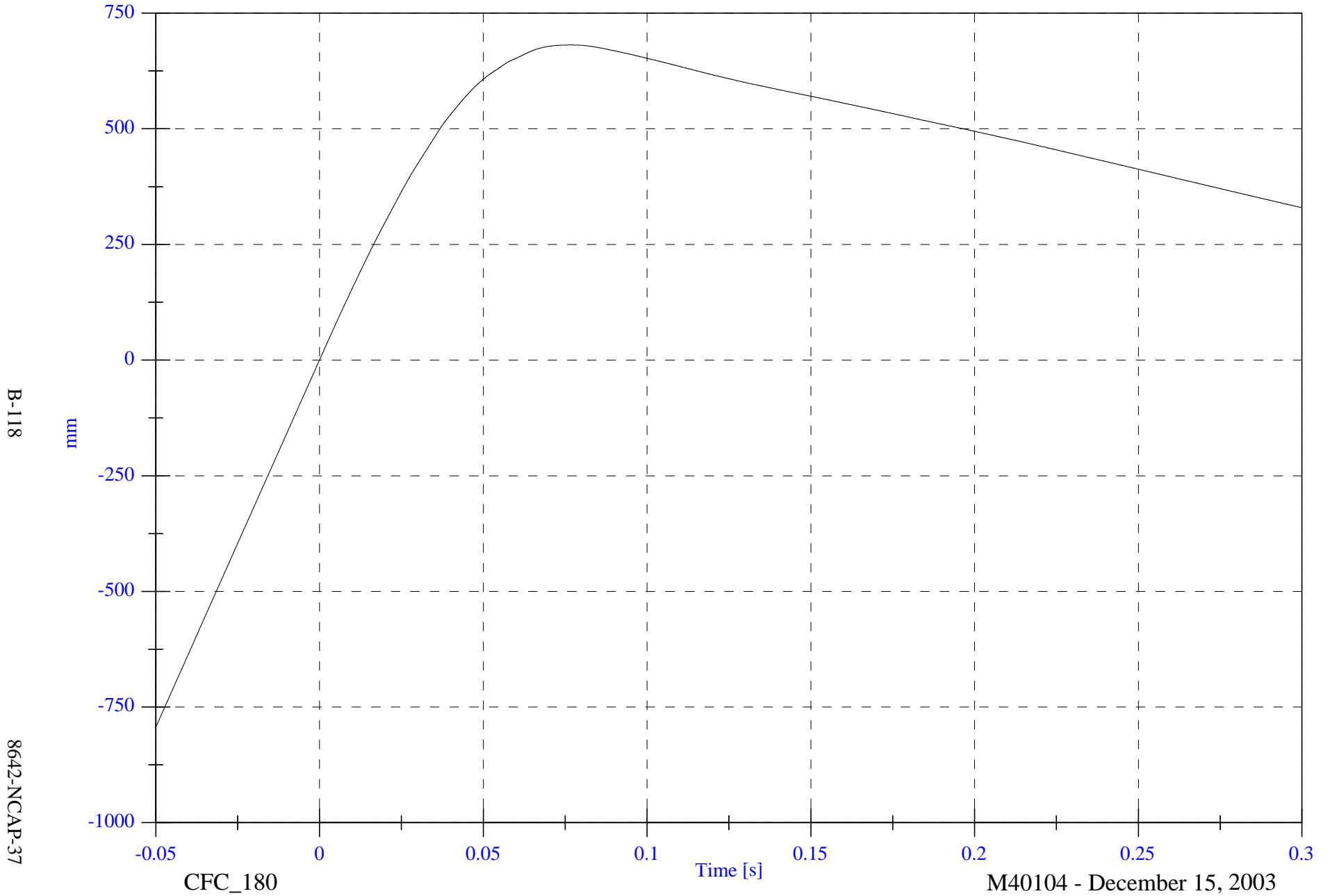
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Left Rear #1x Displacement

Max: 681.2 [mm] at 0.077 [s]

Min: -794.0 [mm] at -0.050 [s]



B-118

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

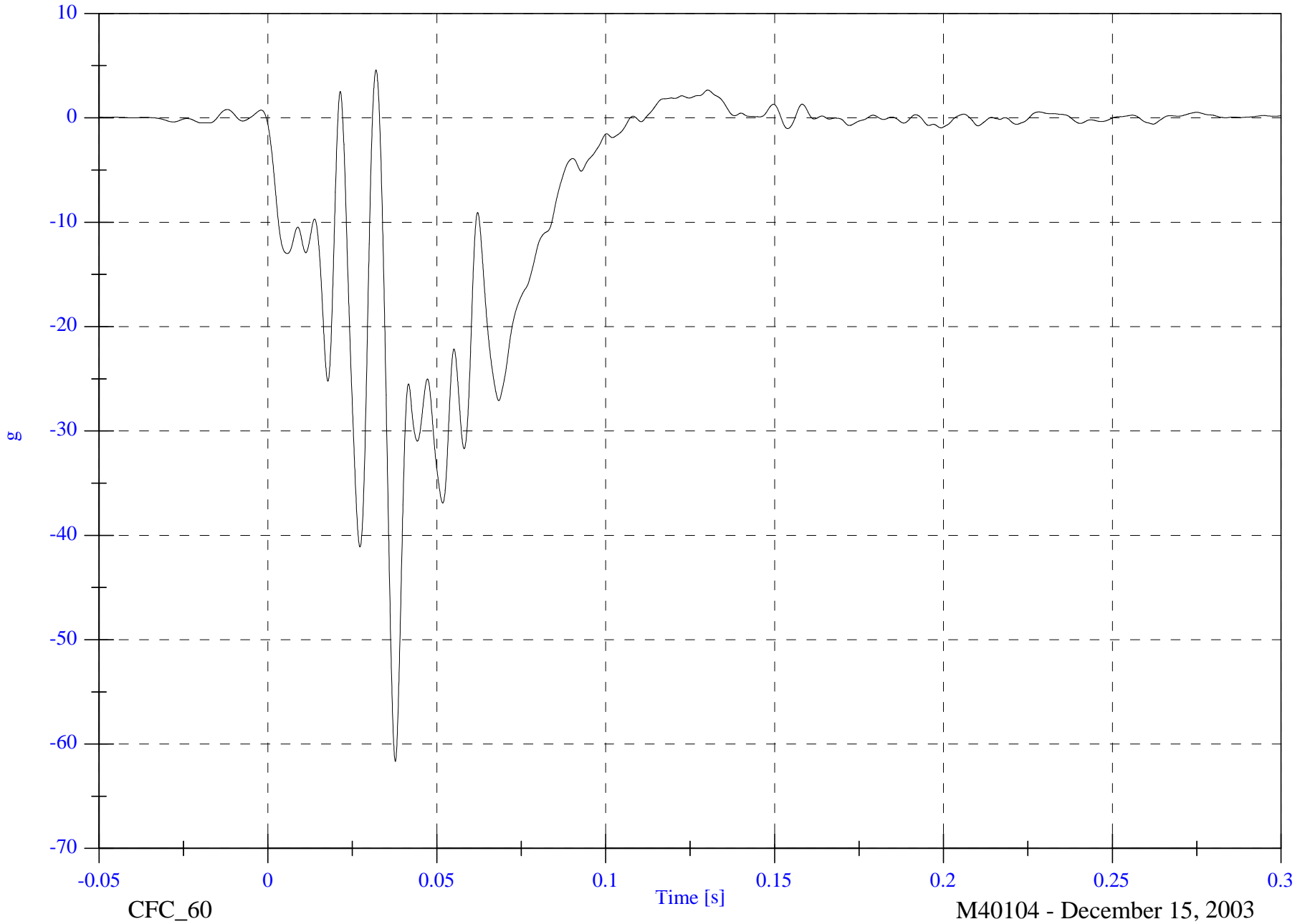
V1 Right Rear #2x

Max: 4.6 [g] at 0.032 [s]

Min: -61.7 [g] at 0.038 [s]

B-119

8642-NCAP-37



CFC_60

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

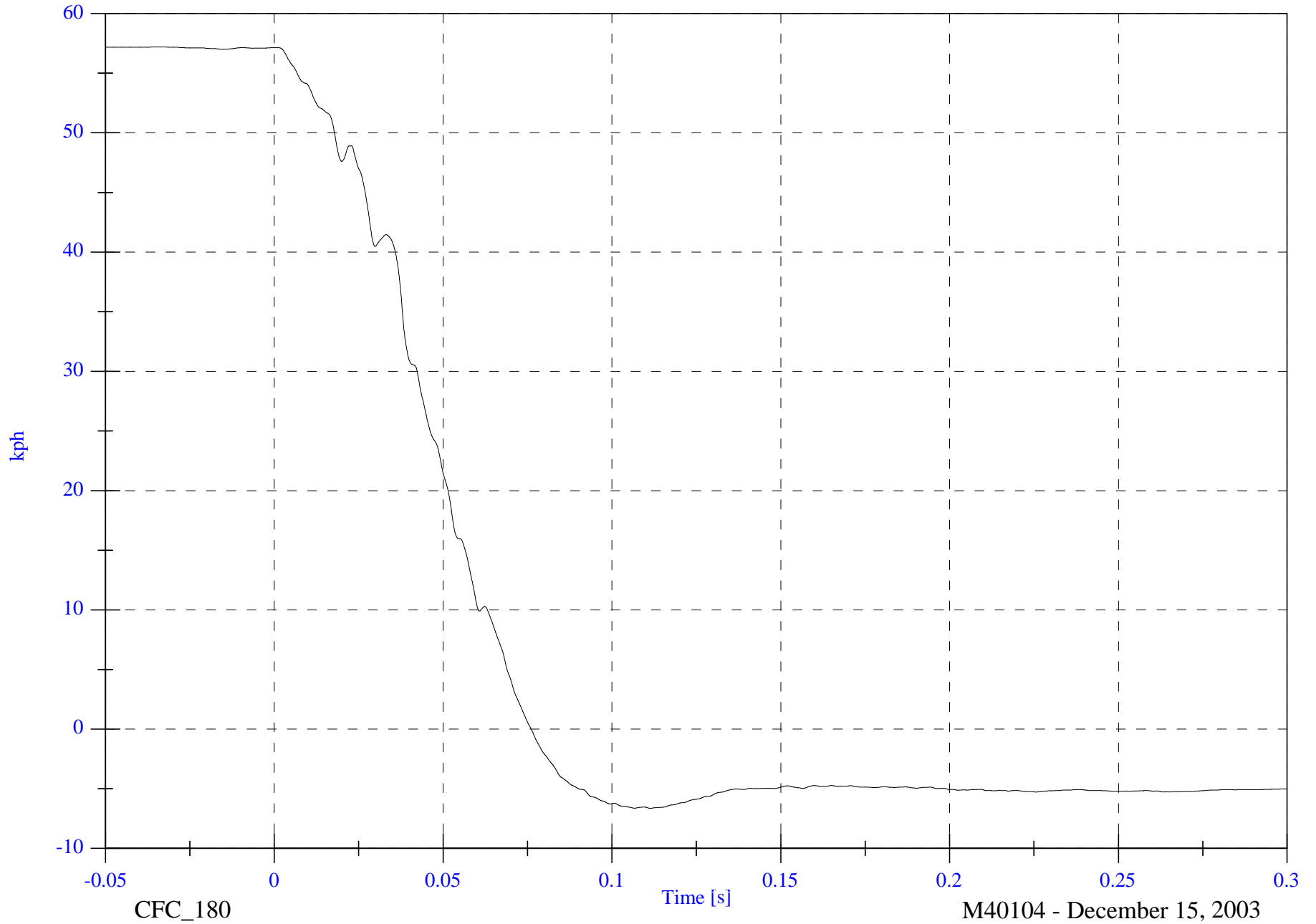
Max: 57.2 [kph] at -0.036 [s]

V1 Right Rear #2x Velocity

Min: -6.6 [kph] at 0.111 [s]

B-120

8642-NCAP-37



CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

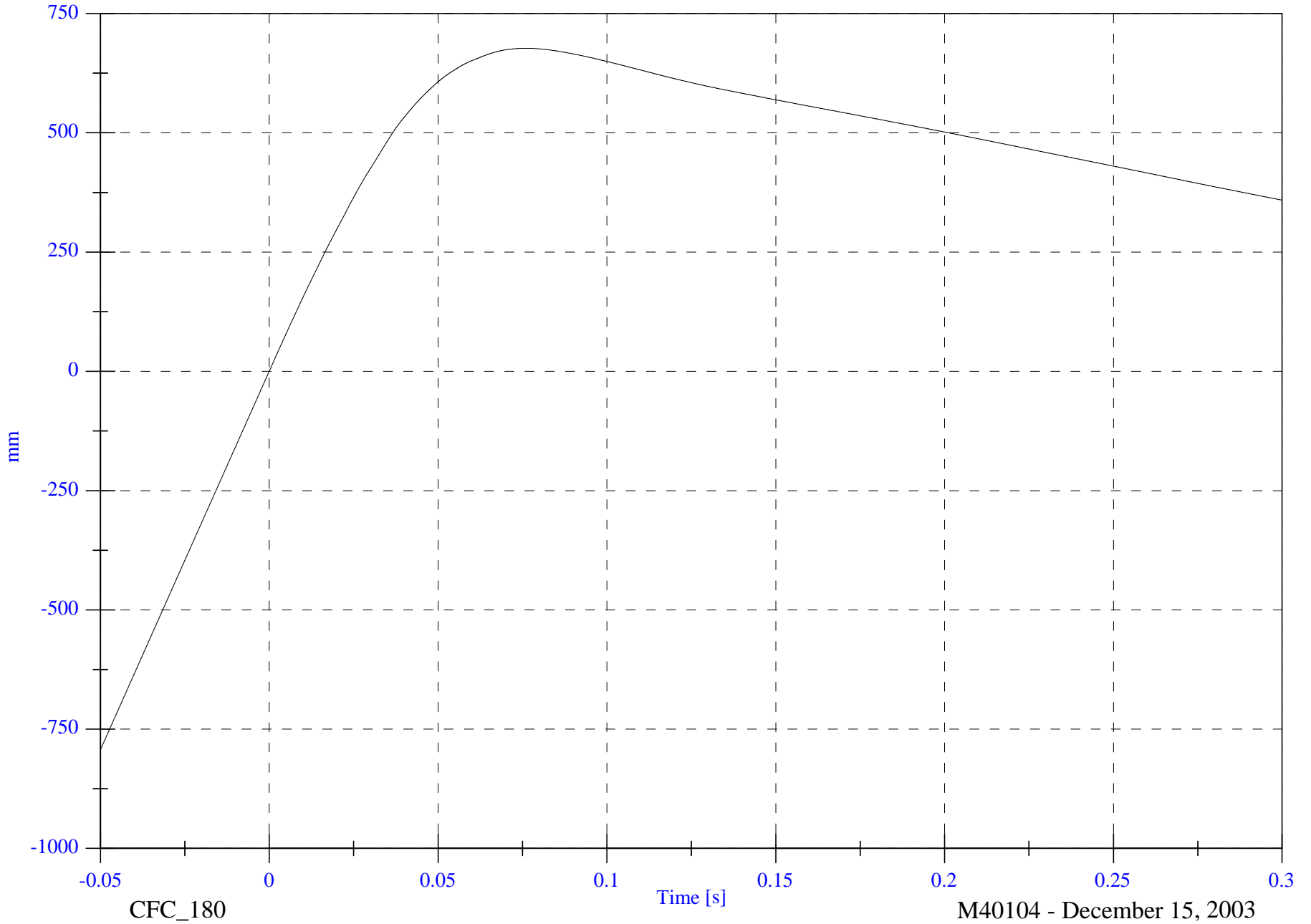
V1 Right Rear #2x Displacement

Max: 677.1 [mm] at 0.076 [s]

Min: -793.5 [mm] at -0.050 [s]

B-121

8642-NCAP-37



CFC_180

Time [s]

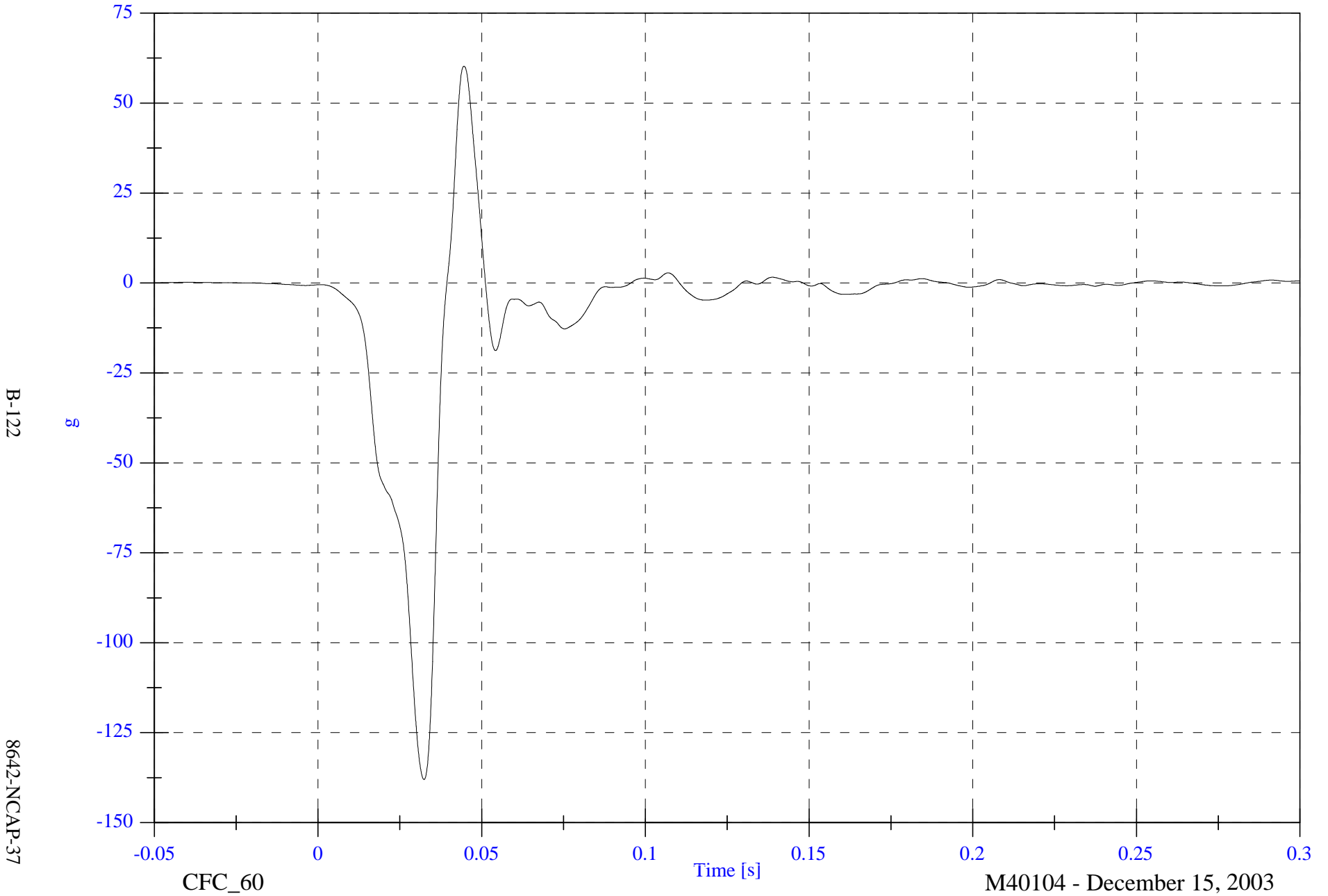
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Engine Top #3x

Max: 60.2 [g] at 0.045 [s]

Min: -138.0 [g] at 0.032 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

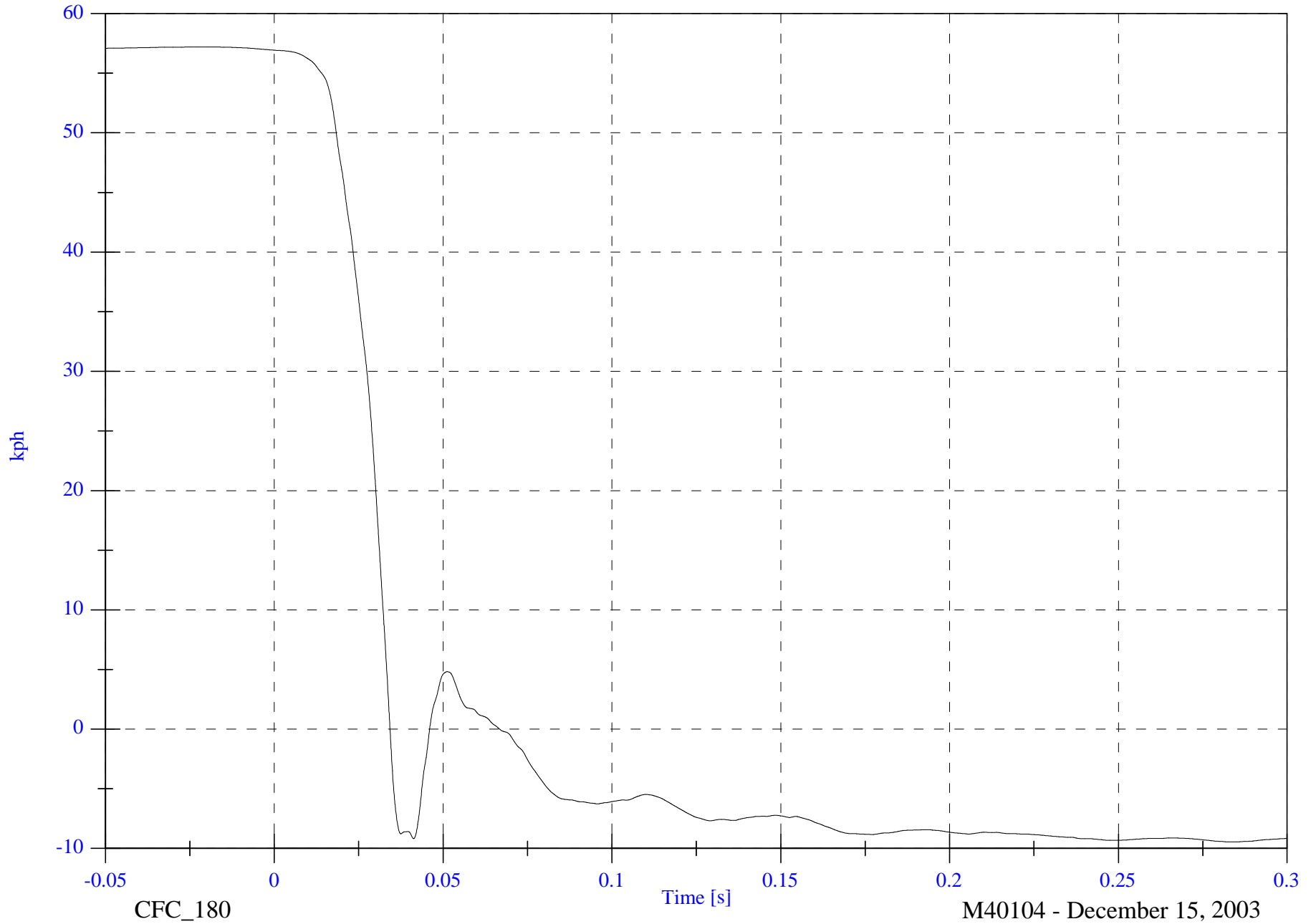
V1 Engine Top #3x Velocity

Max: 57.2 [kph] at -0.021 [s]

Min: -9.5 [kph] at 0.283 [s]

B-123

8642-NCAP-37



CFC_180

Time [s]

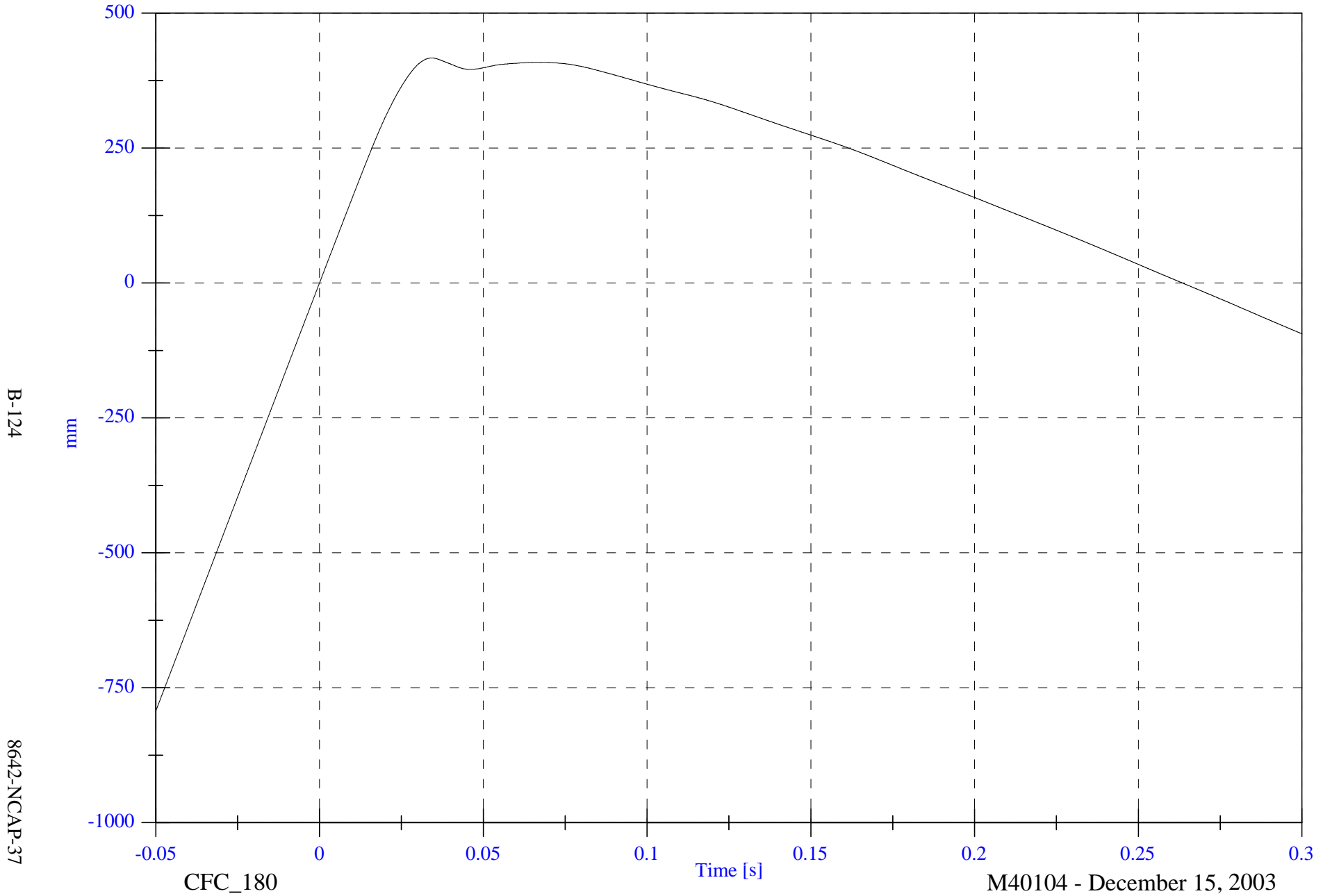
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Engine Top #3x Displacement

Max: 416.9 [mm] at 0.034 [s]

Min: -793.5 [mm] at -0.050 [s]



B-124

8642-NCAP-37

CFC_180

Time [s]

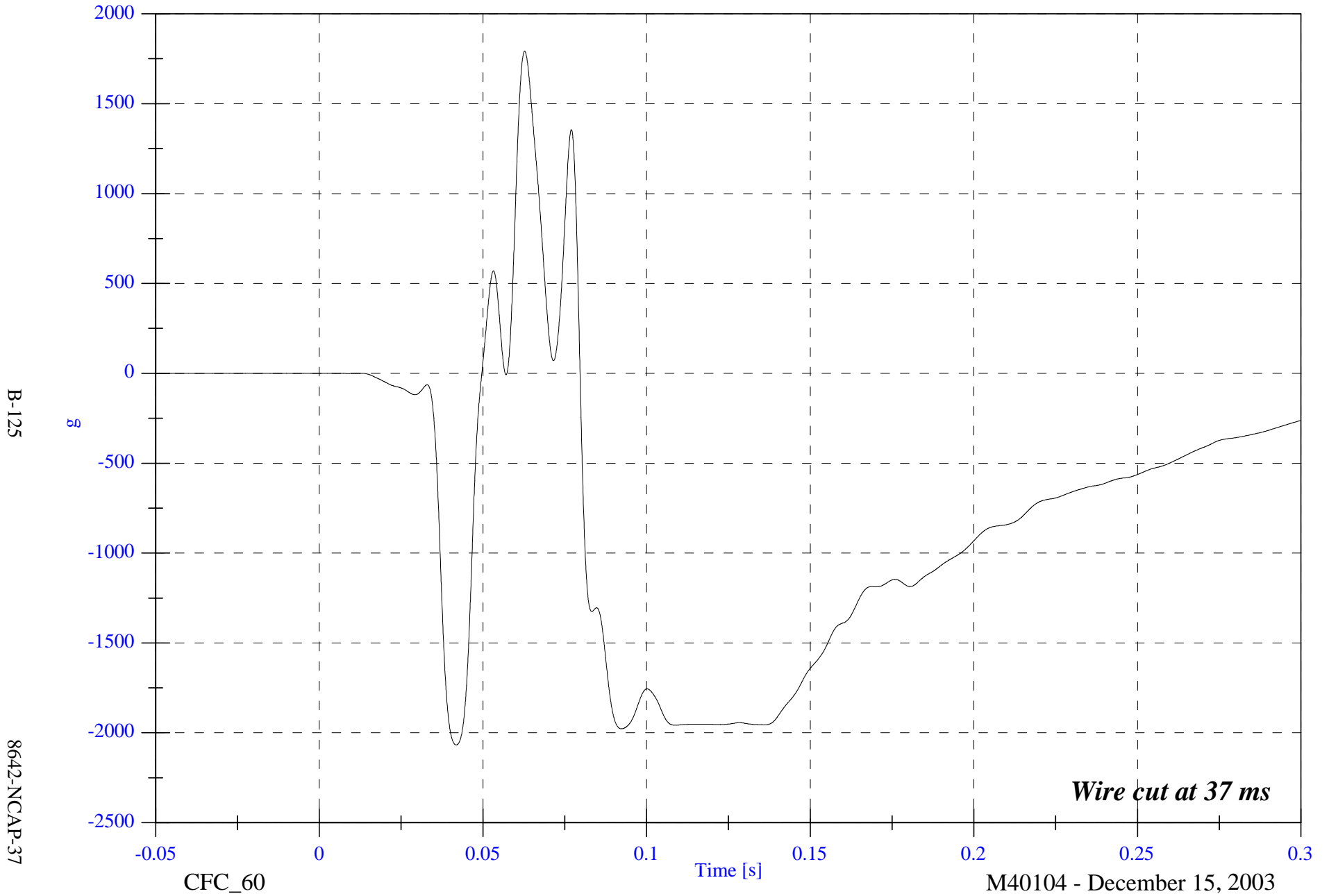
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Engine Bottom #4x

Max: 1791.9 [g] at 0.063 [s]

Min: -2067.1 [g] at 0.042 [s]



B-125

8642-NCAP-37

CFC_60

Time [s]

M40104 - December 15, 2003

Wire cut at 37 ms

2004 NCAP Test 1 2004 Chevrolet Malibu

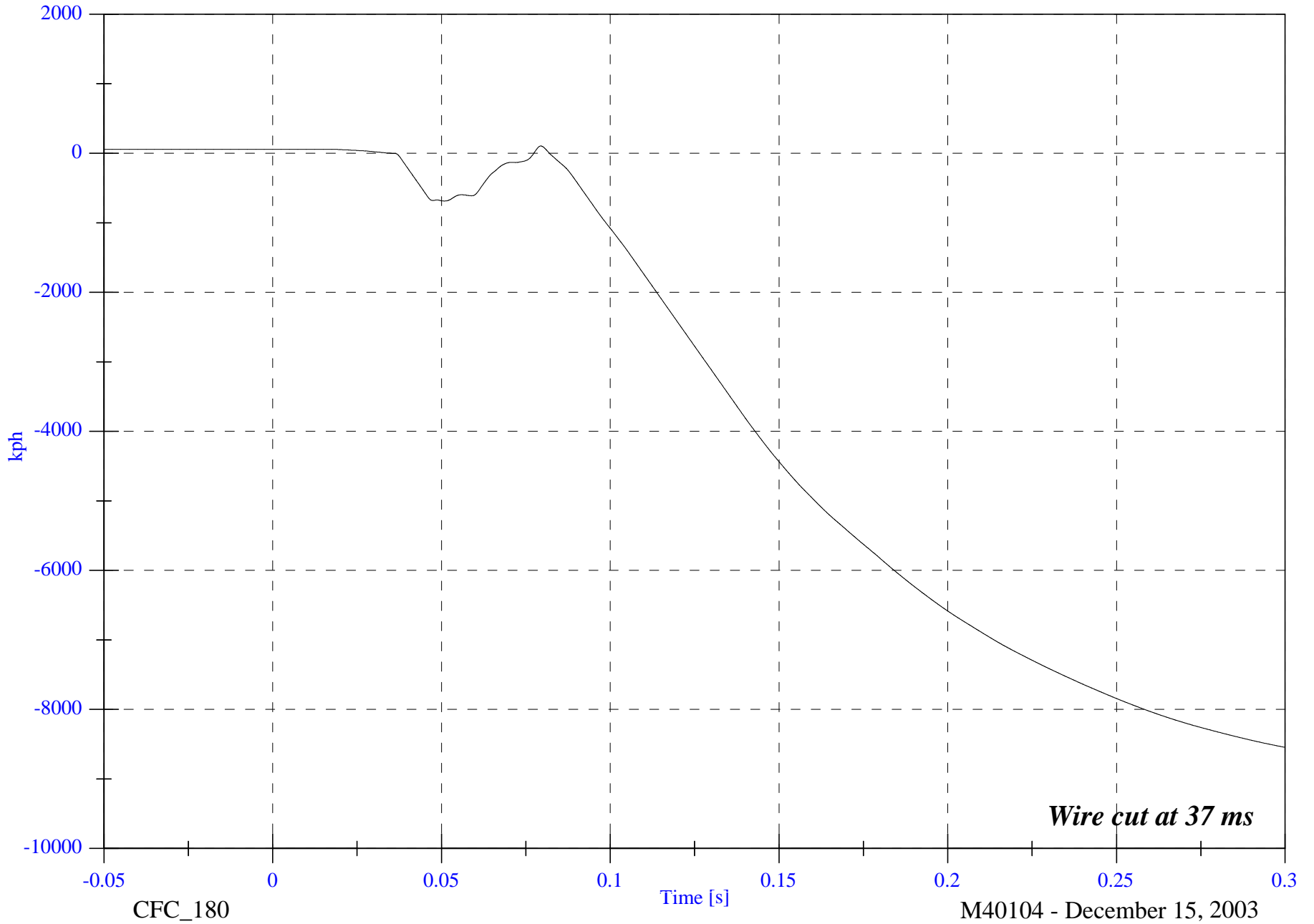
V1 Engine Bottom #4x Velocity

Max: 104.4 [kph] at 0.079 [s]

Min: -8545.5 [kph] at 0.300 [s]

B-126

8642-NCAP-37



CFC_180

Time [s]

M40104 - December 15, 2003

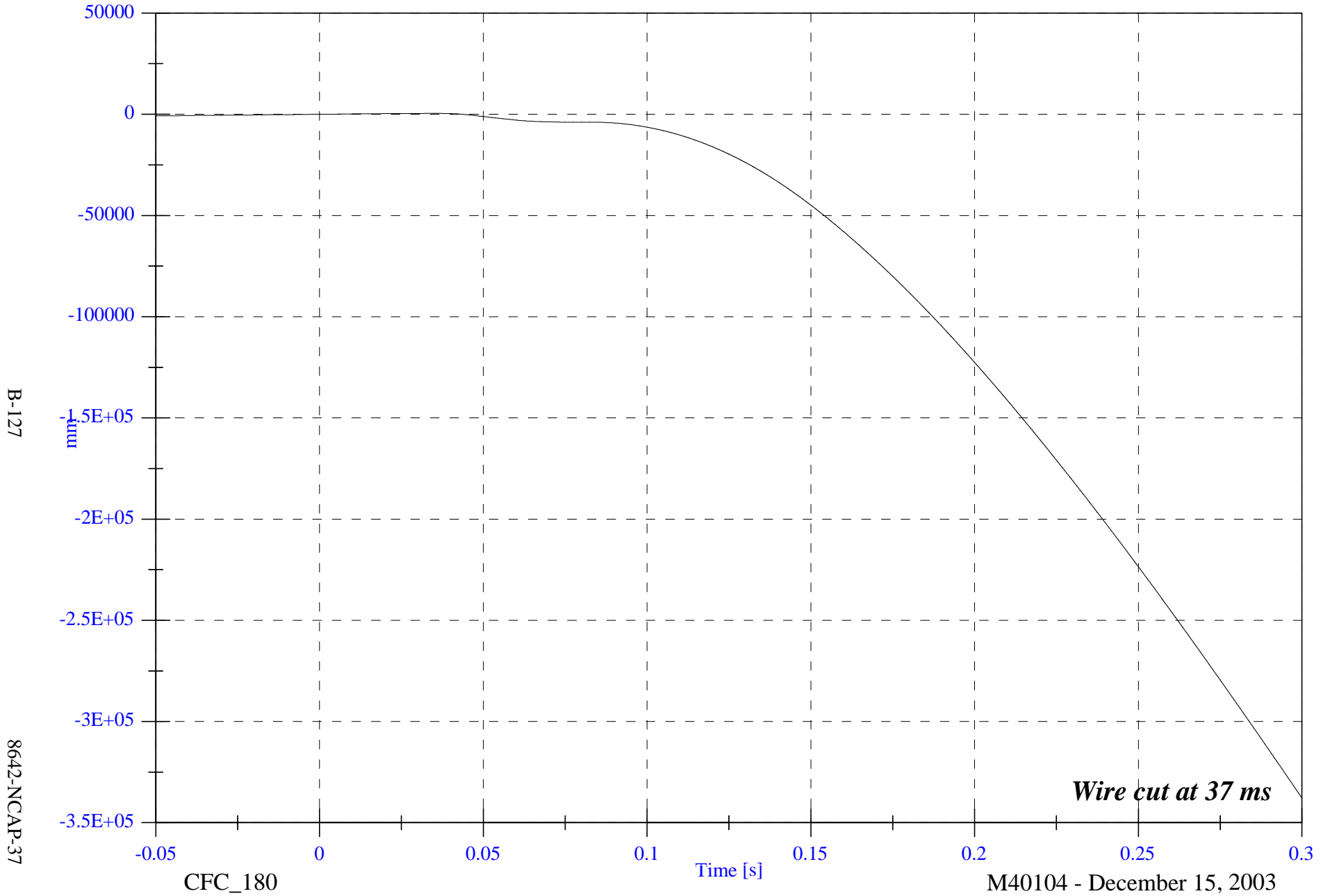
Wire cut at 37 ms

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 438.4 [mm] at 0.035 [s]

Min: -337784.4 [mm] at 0.300 [s]

V1 Engine Bottom #4x Displacement



B-127

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

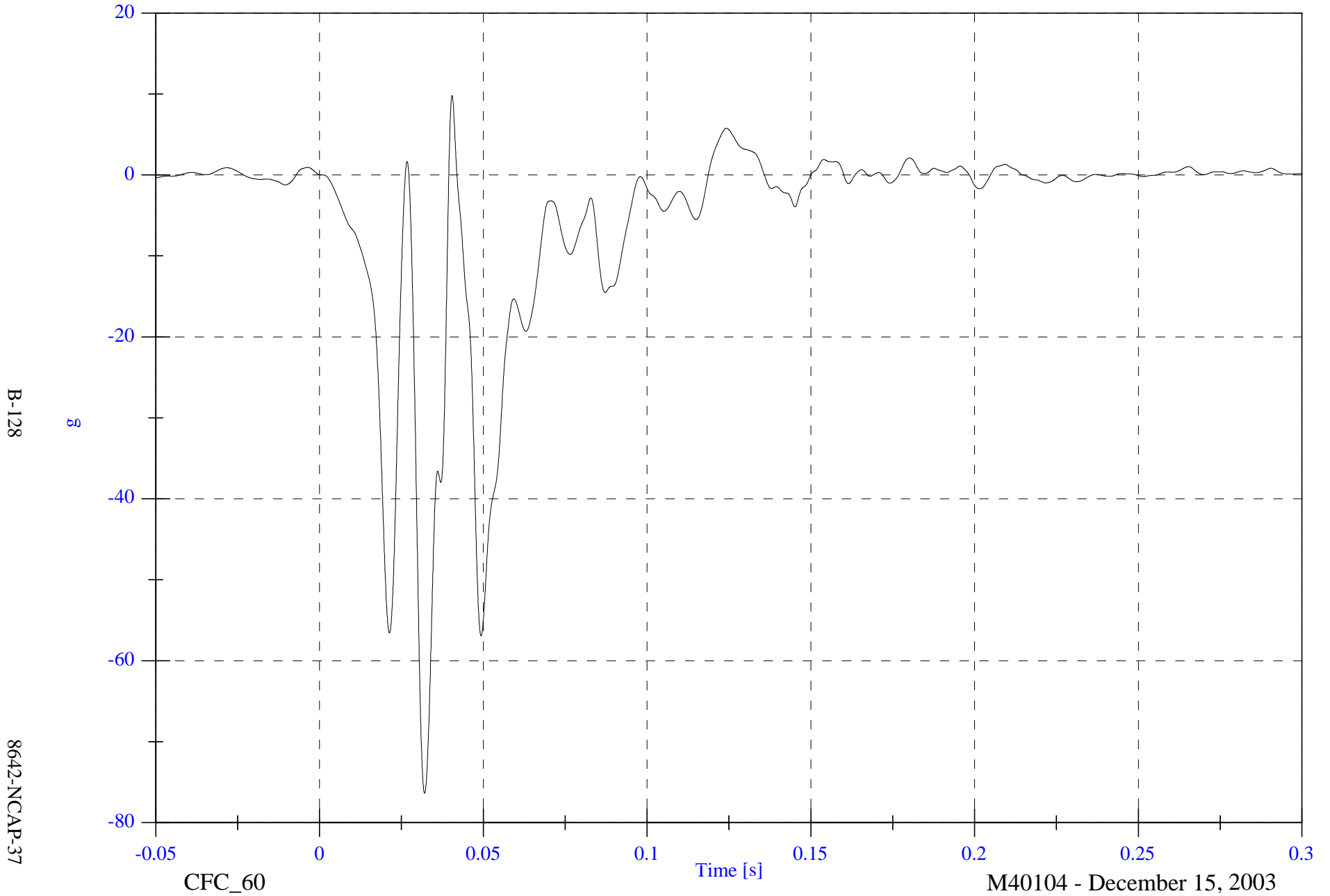
Wire cut at 37 ms

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Right Caliper #5x

Max: 9.9 [g] at 0.040 [s]

Min: -76.4 [g] at 0.032 [s]



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8642-NCAP-37

CFC_60

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

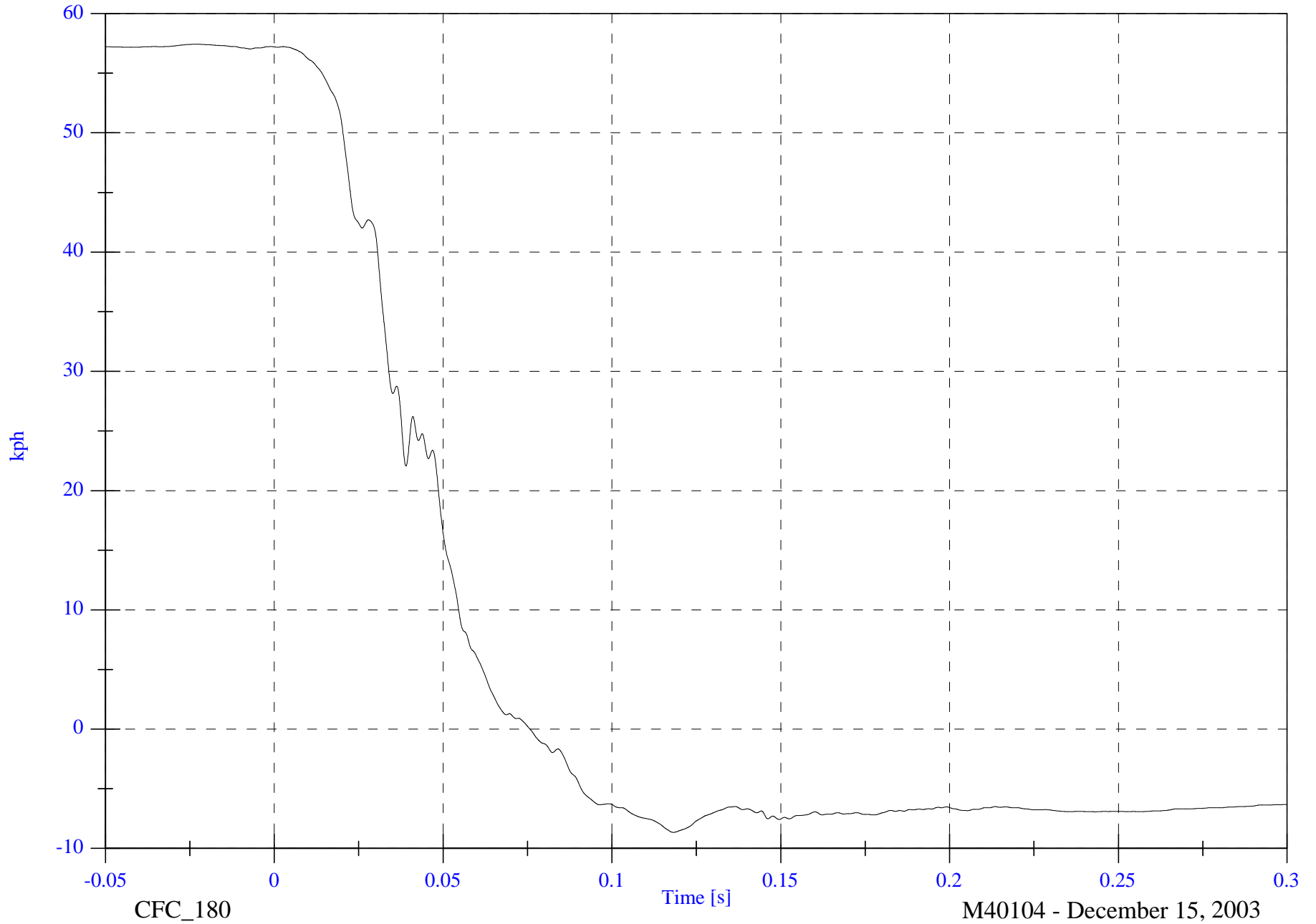
Max: 57.4 [kph] at -0.023 [s]

V1 Right Caliper #5x Velocity

Min: -8.7 [kph] at 0.118 [s]

B-129

8642-NCAP-37



CFC_180

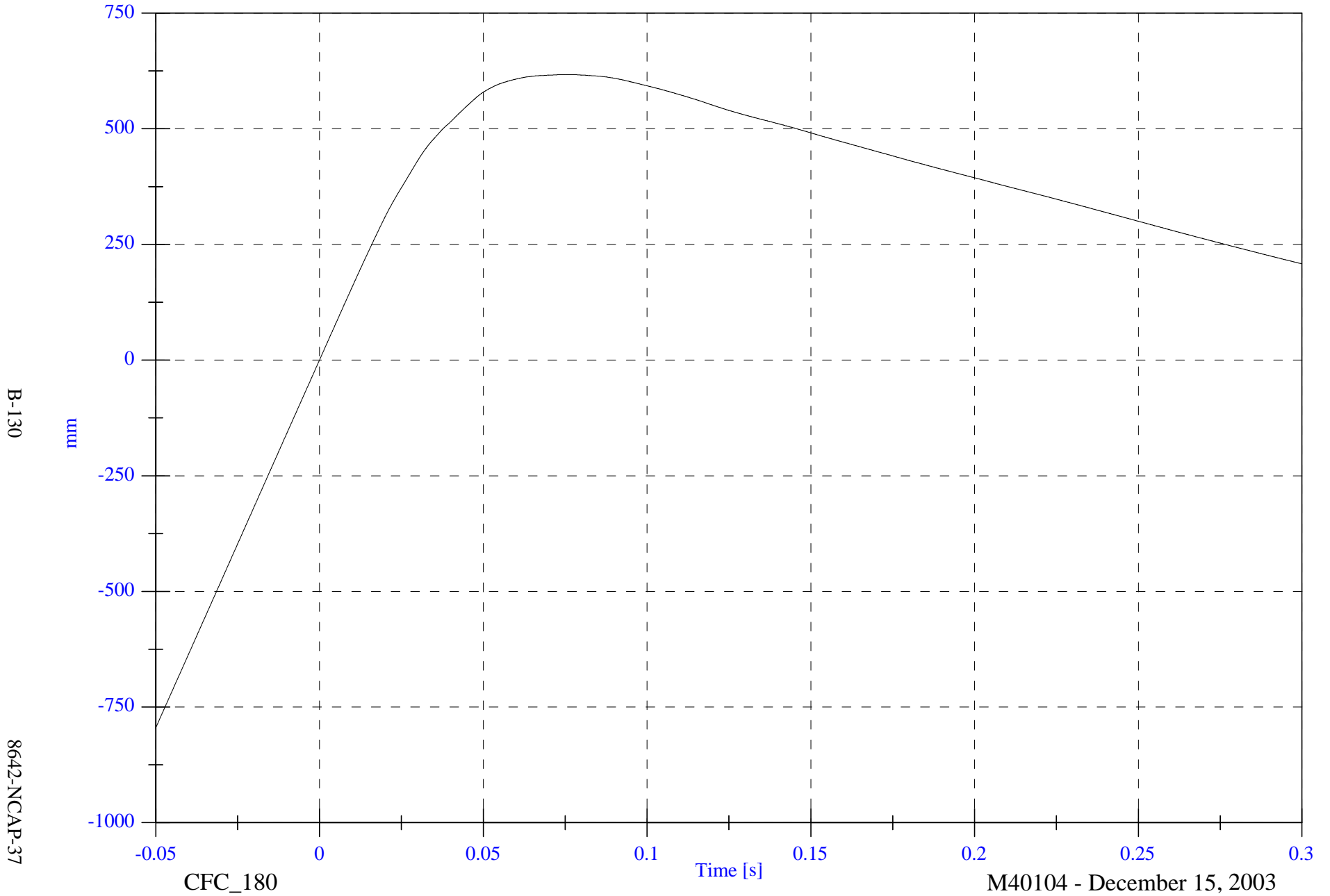
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Right Caliper #5x Displacement

Max: 617.0 [mm] at 0.076 [s]

Min: -795.0 [mm] at -0.050 [s]



B-130

8642-NCAP-37

CFC_180

Time [s]

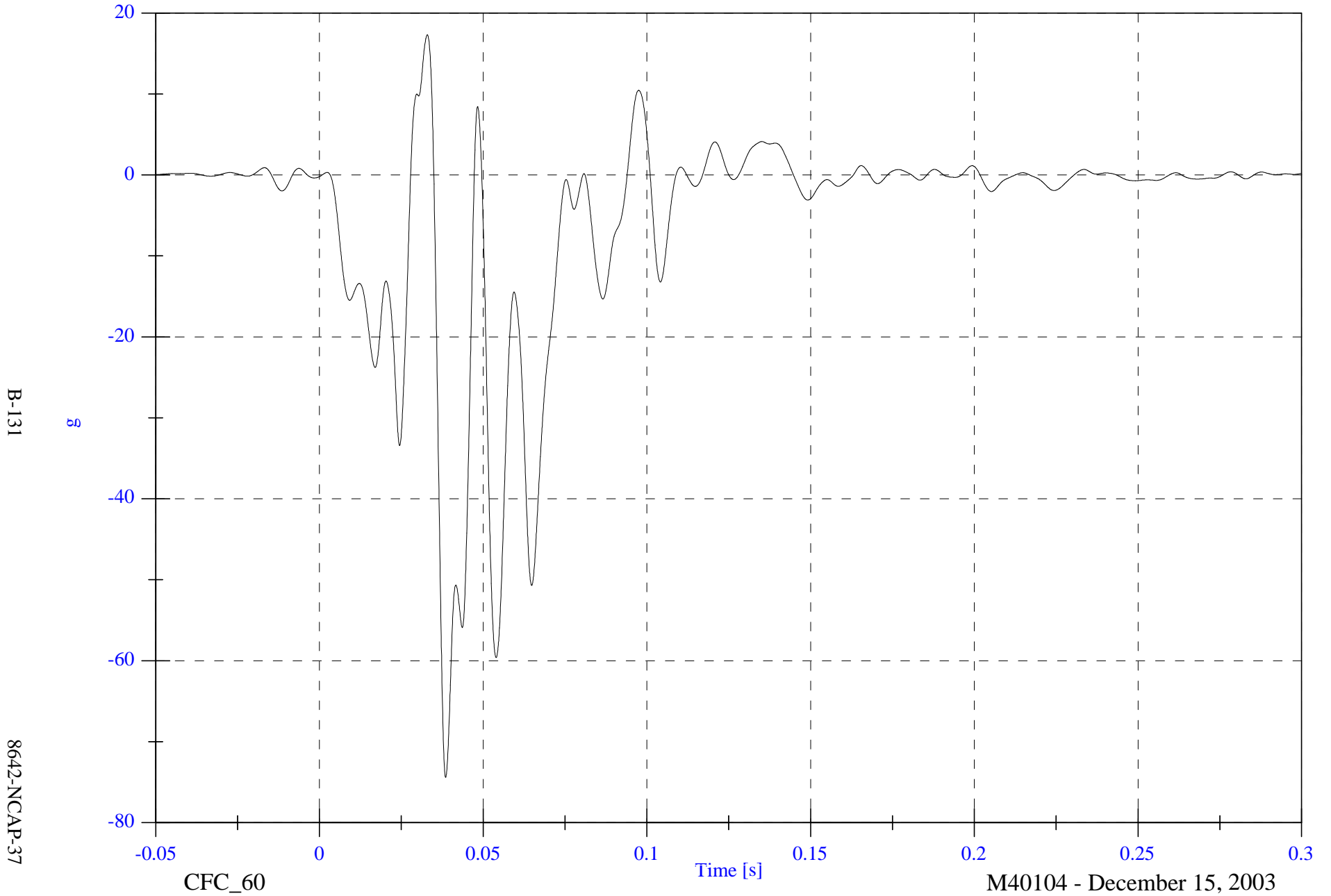
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Instrument Panel #6x

Max: 17.3 [g] at 0.033 [s]

Min: -74.4 [g] at 0.039 [s]



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8642-NCAP-37

CFC_60

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

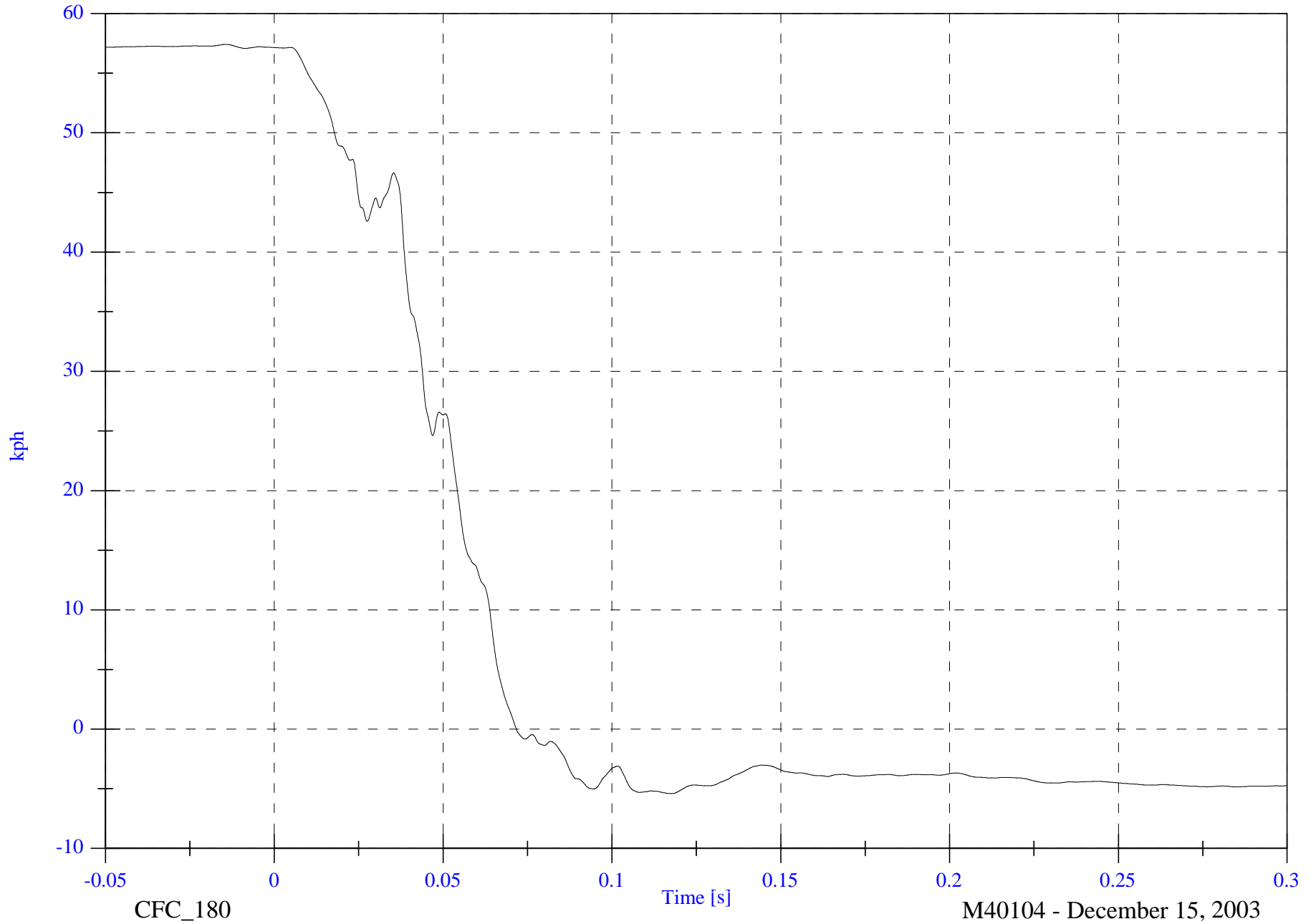
V1 Instrument Panel #6x Velocity

Max: 57.4 [kph] at -0.014 [s]

Min: -5.4 [kph] at 0.117 [s]

B-132

8642-NCAP-37



CFC_180

Time [s]

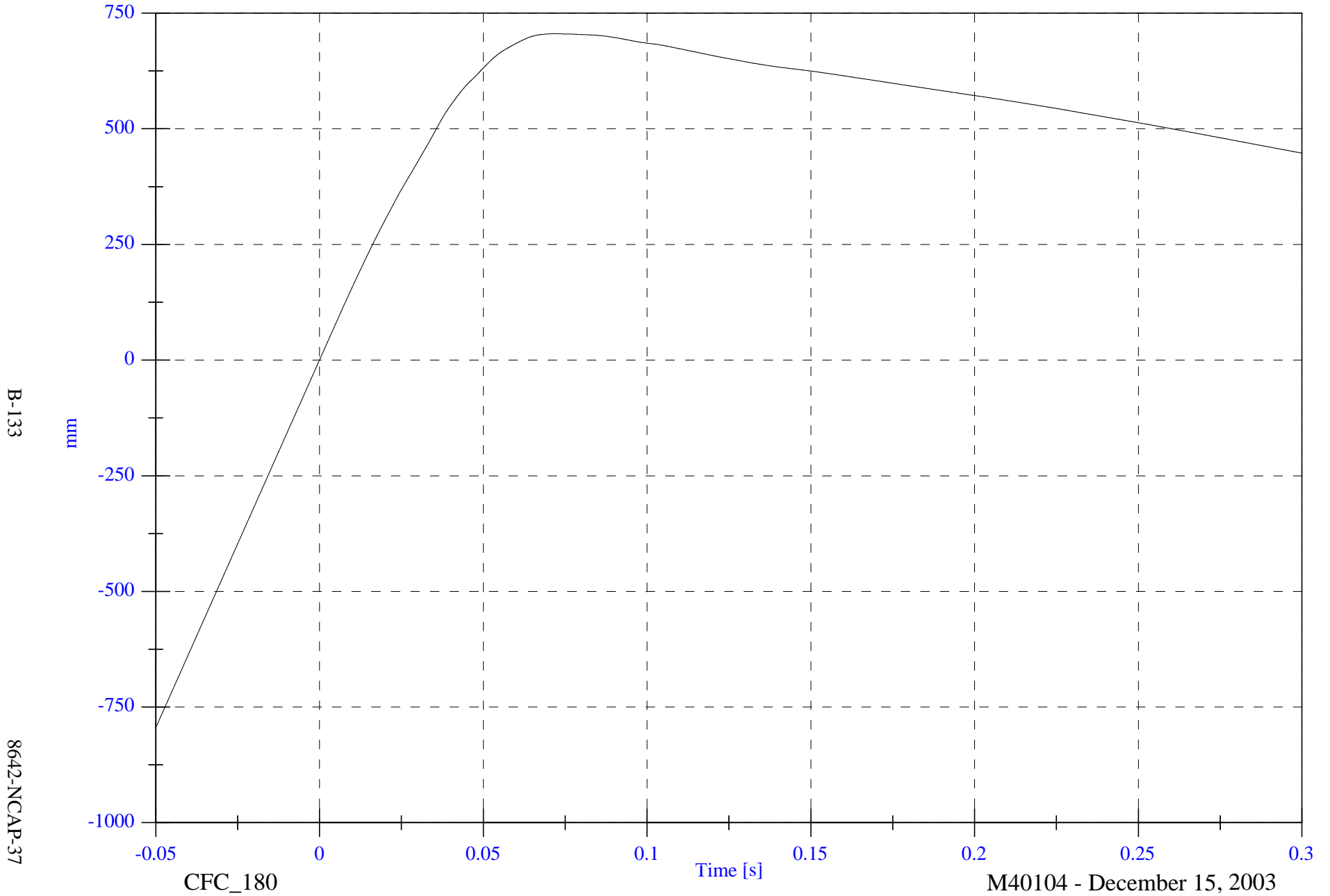
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 705.4 [mm] at 0.072 [s]

V1 Instrument Panel #6x Displacement

Min: -794.9 [mm] at -0.050 [s]



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8642-NCAP-37

CFC_180

Time [s]

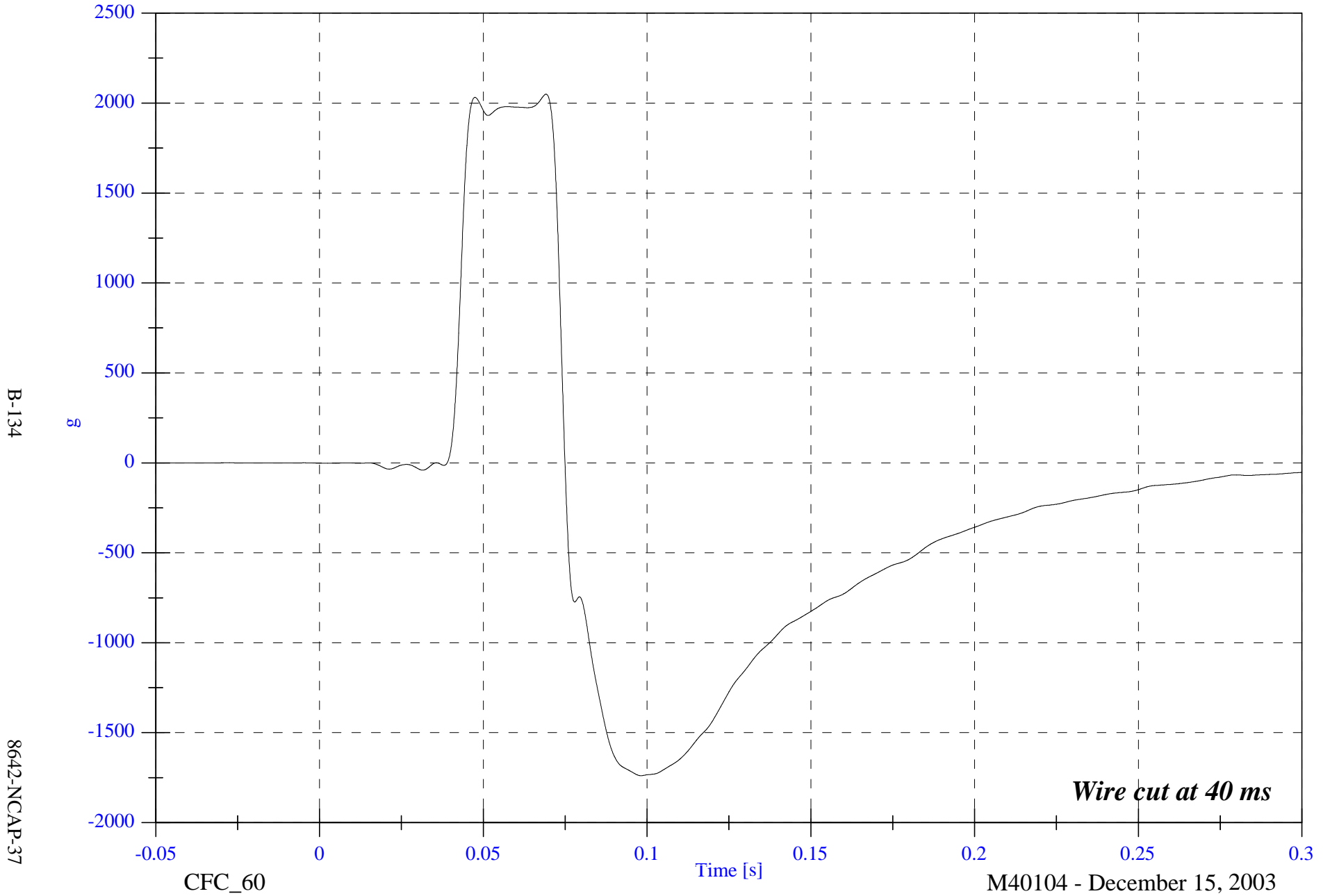
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Left Caliper #7x

Max: 2049.4 [g] at 0.069 [s]

Min: -1738.5 [g] at 0.098 [s]



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8642-NCAP-37

CFC_60

Time [s]

M40104 - December 15, 2003

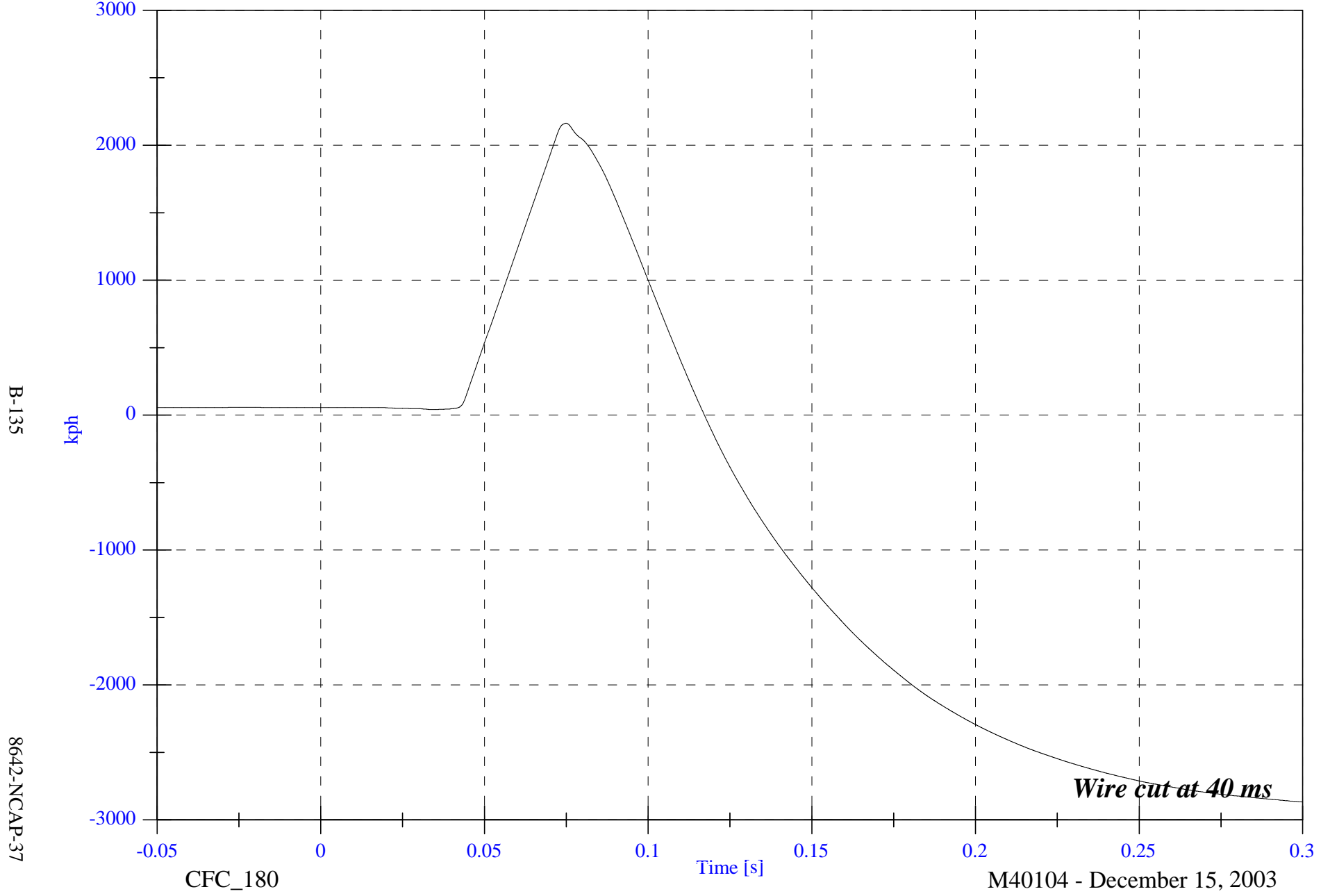
Wire cut at 40 ms

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 2162.6 [kph] at 0.075 [s]

Min: -2867.3 [kph] at 0.300 [s]

V1 Left Caliper #7x Velocity



B-135

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

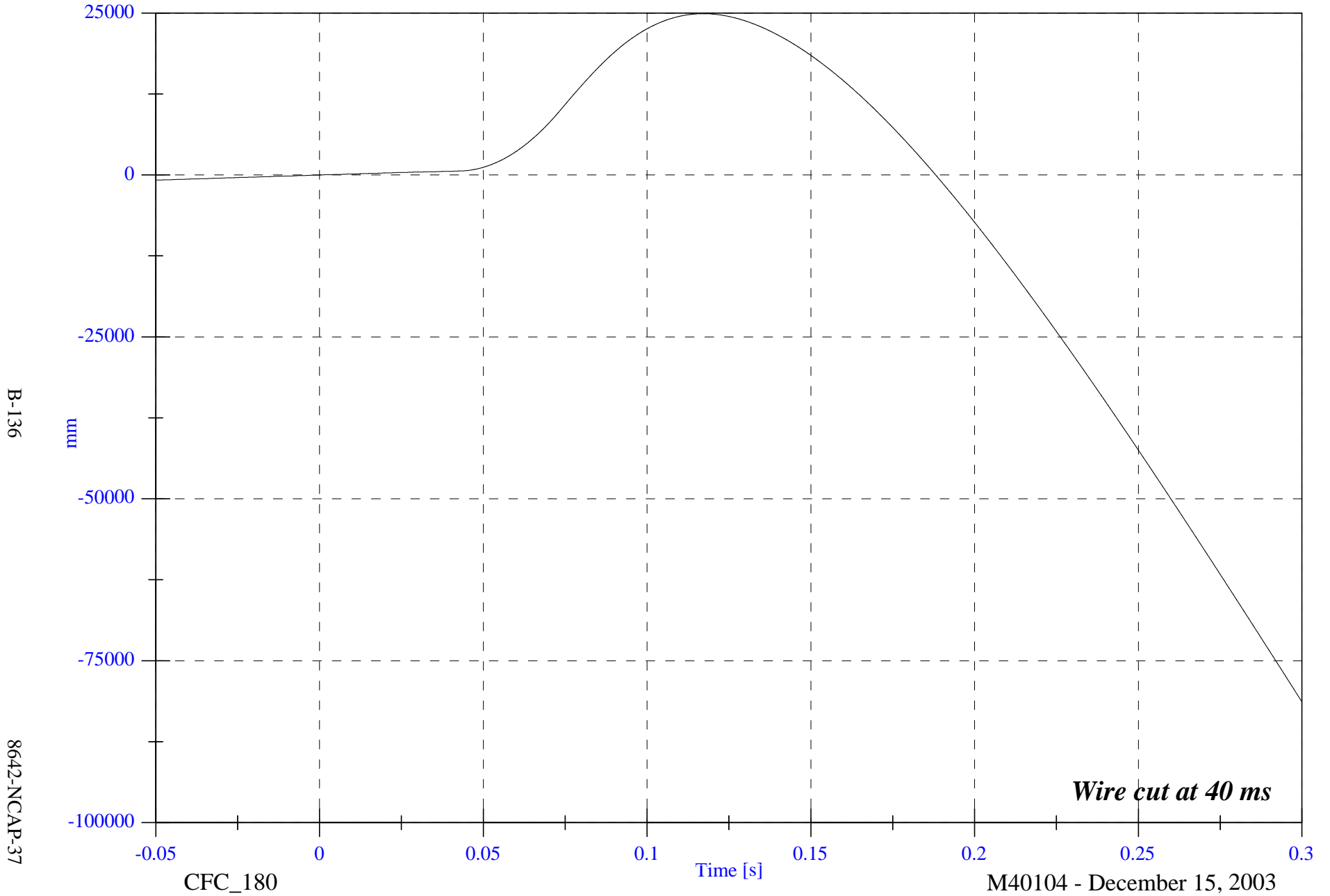
Wire cut at 40 ms

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 24905.9 [mm] at 0.117 [s]

V1 Left Caliper #7x Displacement

Min: -81336.5 [mm] at 0.300 [s]



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8642-NCAP-37

CFC_180

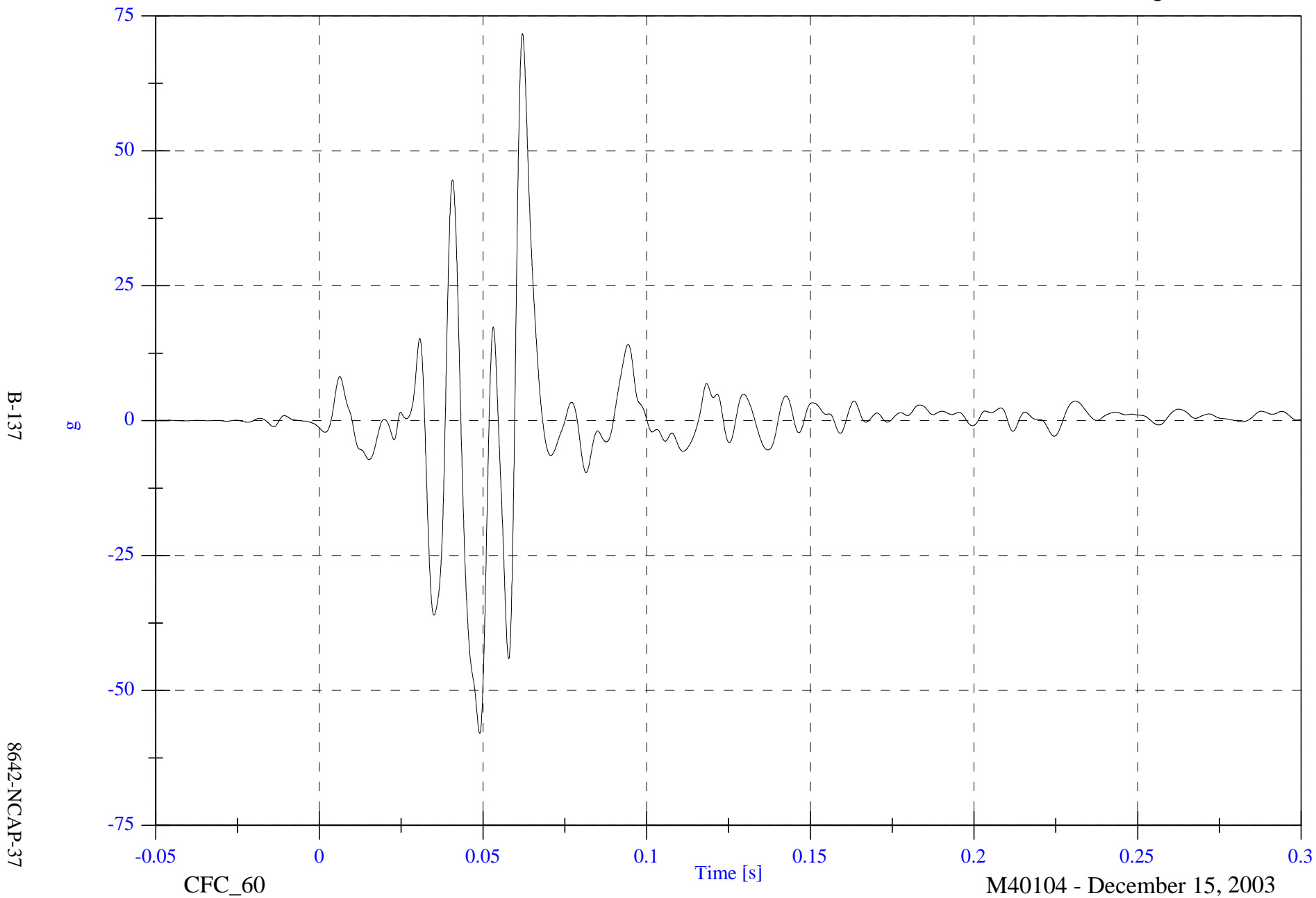
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Left Rear #8z

Max: 71.7 [g] at 0.062 [s]

Min: -58.0 [g] at 0.049 [s]

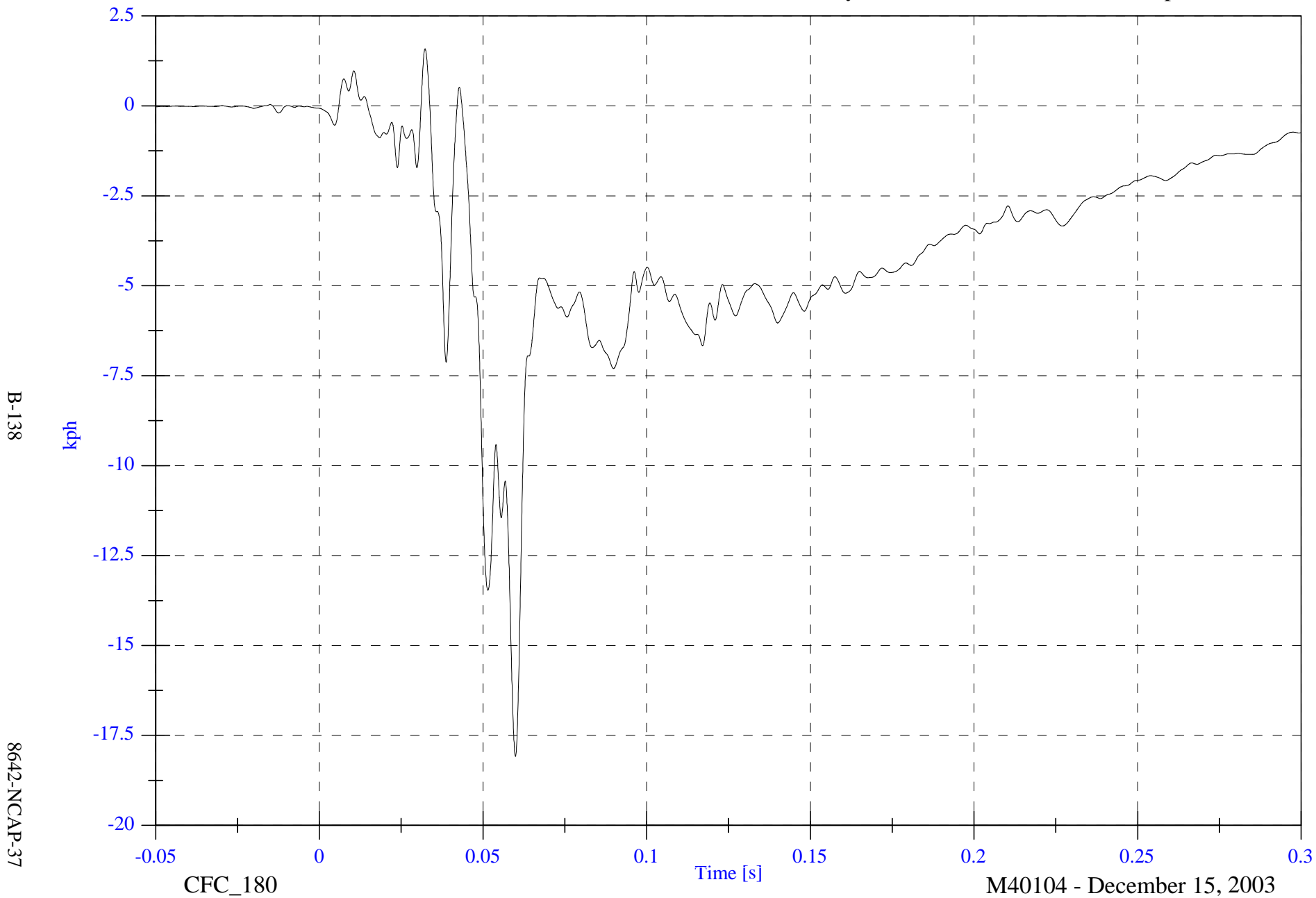


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1.6 [kph] at 0.032 [s]

V1 Left Rear #8z Velocity

Min: -18.1 [kph] at 0.060 [s]



B-138

8642-NCAP-37

CFC_180

Time [s]

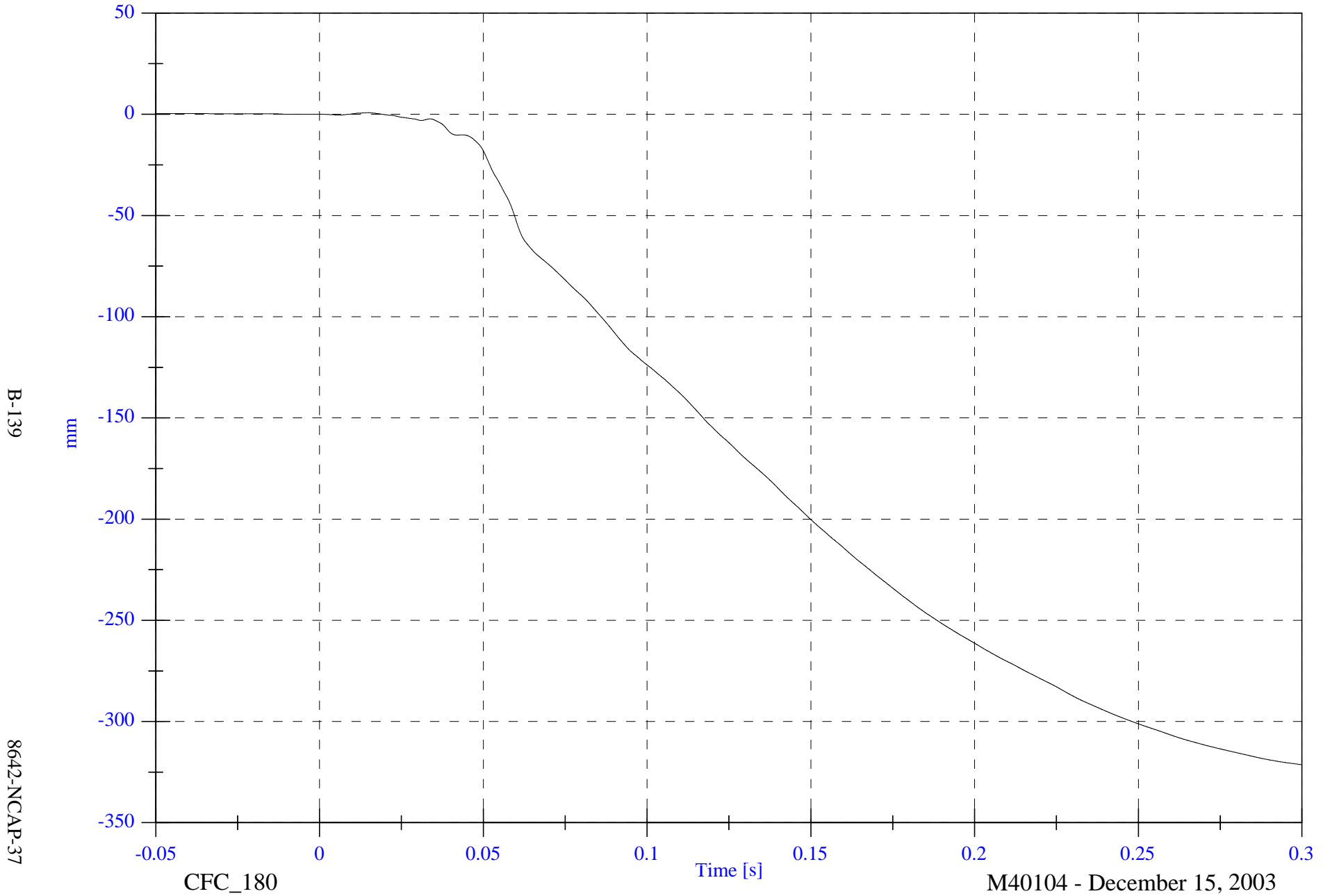
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Left Rear #8z Displacement

Max: 0.7 [mm] at 0.015 [s]

Min: -321.3 [mm] at 0.300 [s]



B-139

8642-NCAP-37

CFC_180

Time [s]

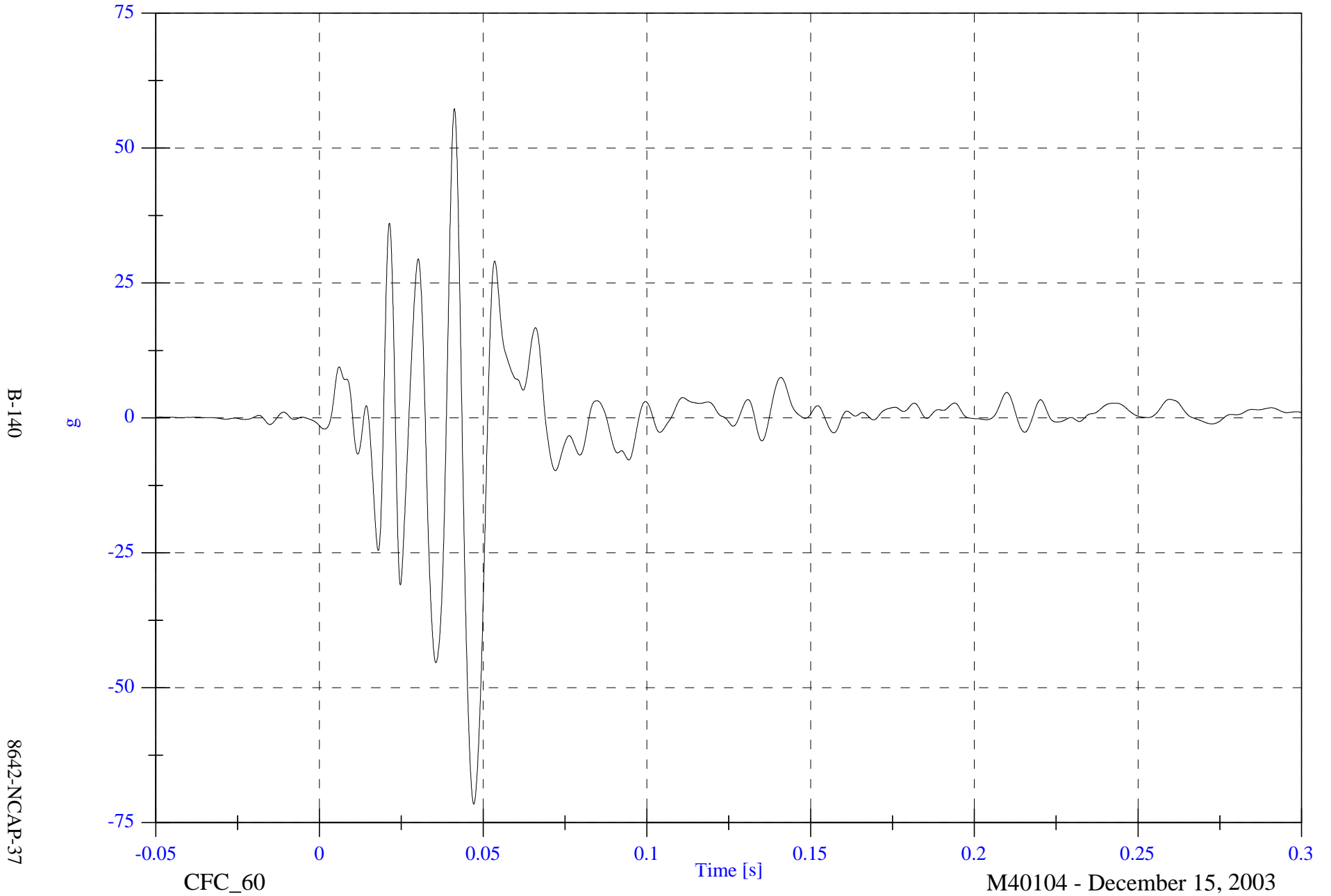
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Right Rear #9z

Max: 57.3 [g] at 0.041 [s]

Min: -71.5 [g] at 0.047 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

V1 Right Rear #9z Velocity

Max: 3.9 [kph] at 0.023 [s]

Min: -12.7 [kph] at 0.052 [s]



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8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

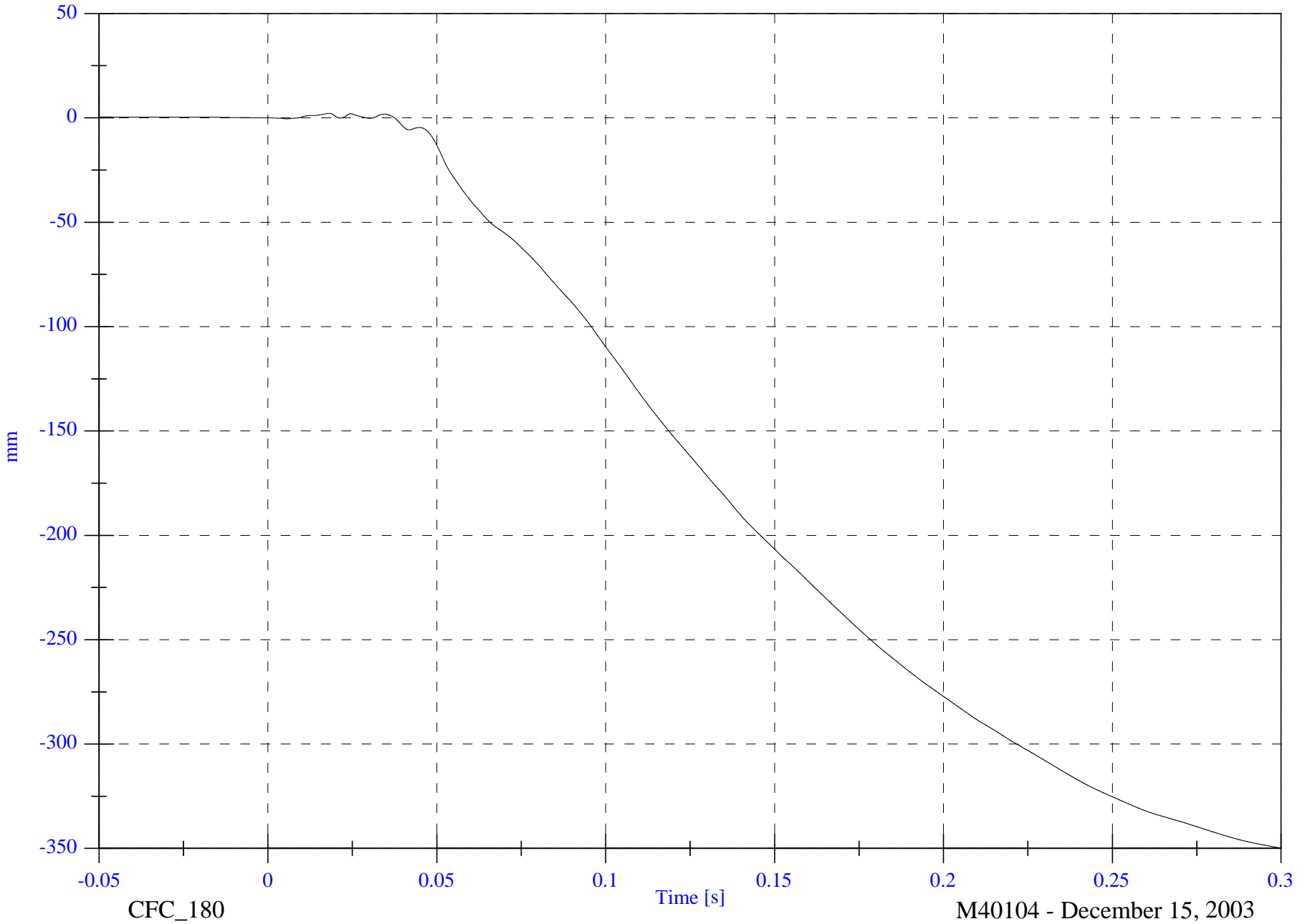
V1 Right Rear #9z Displacement

Max: 2.1 [mm] at 0.018 [s]

Min: -349.8 [mm] at 0.300 [s]

B-142

8642-NCAP-37



CFC_180

Time [s]

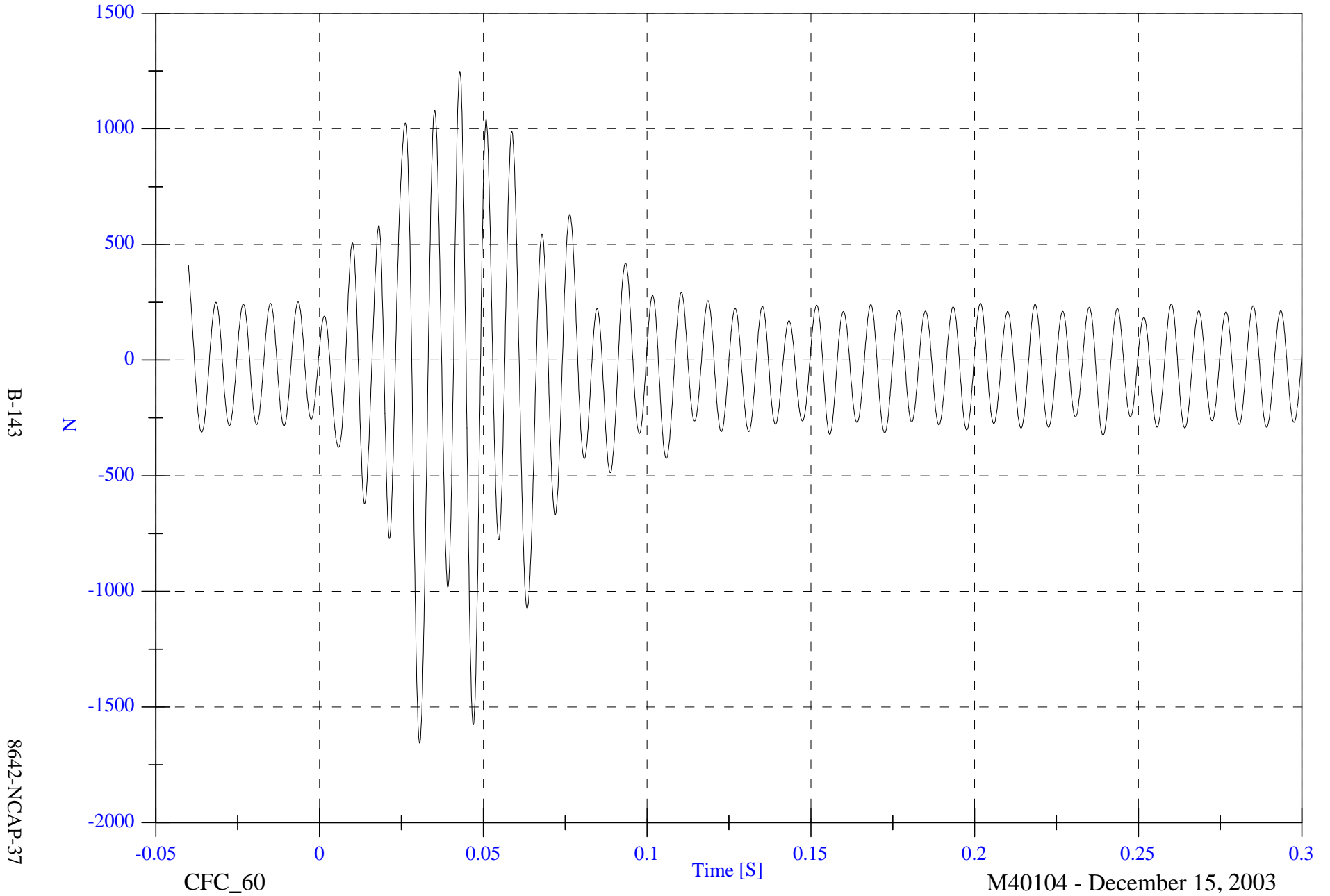
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A1 Fx

Max: 1248.1 [N] at 0.043 [S]

Min: -1656.6 [N] at 0.031 [S]



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8642-NCAP-37

CFC_60

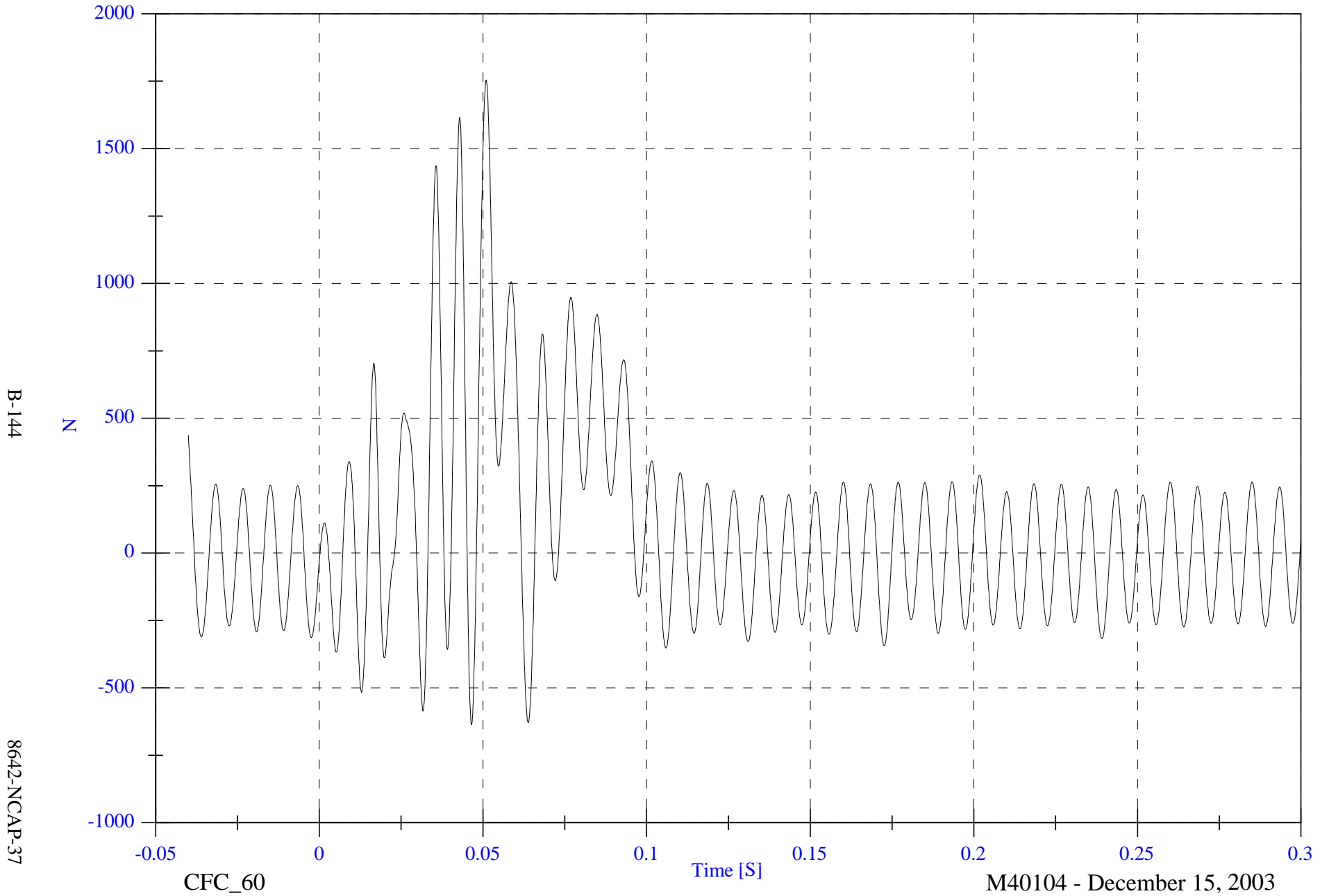
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A2 Fx

Max: 1754.9 [N] at 0.051 [S]

Min: -636.6 [N] at 0.046 [S]

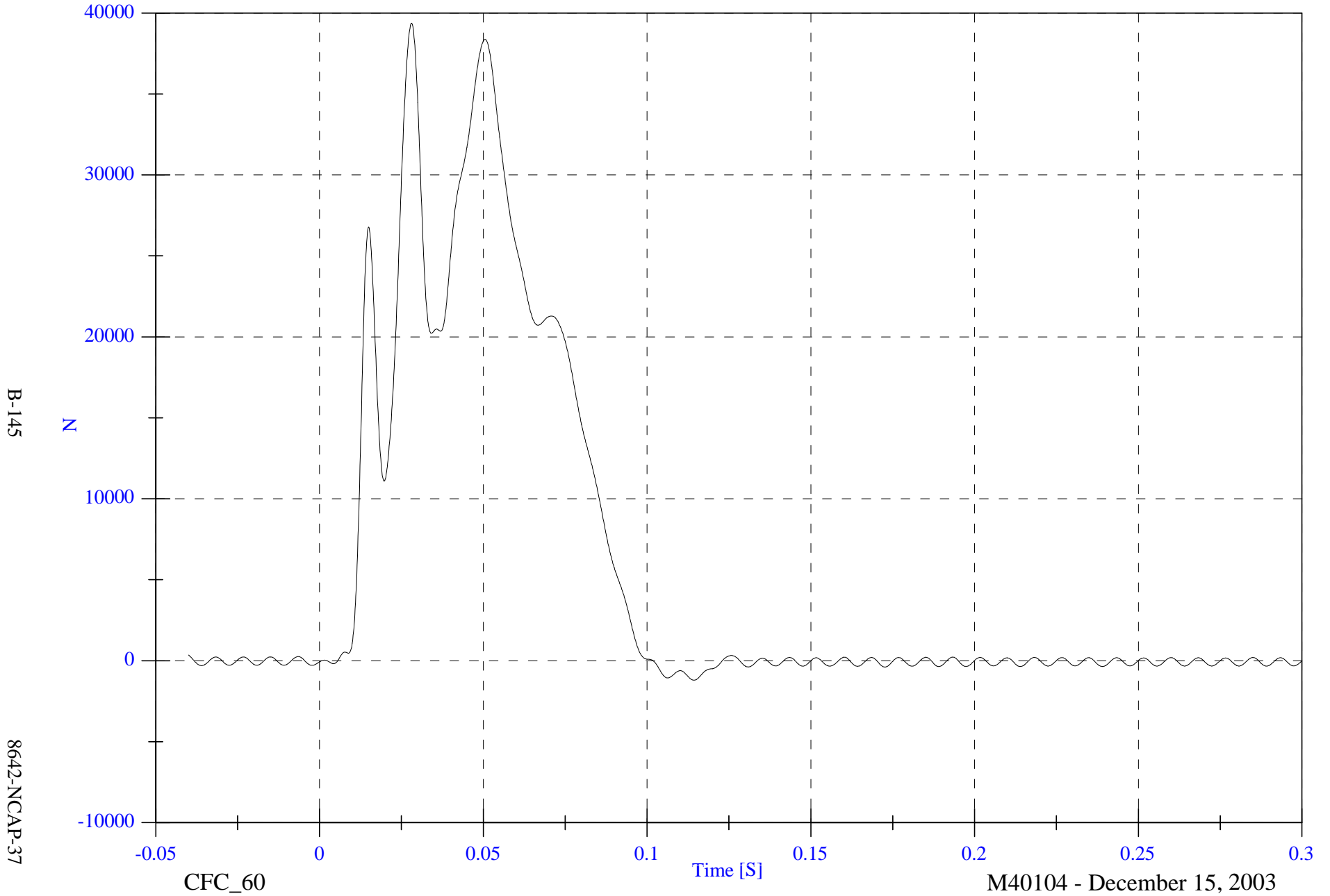


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A3 Fx

Max: 39377.6 [N] at 0.028 [S]

Min: -1200.4 [N] at 0.114 [S]



B-145

8642-NCAP-37

CFC_60

Time [S]

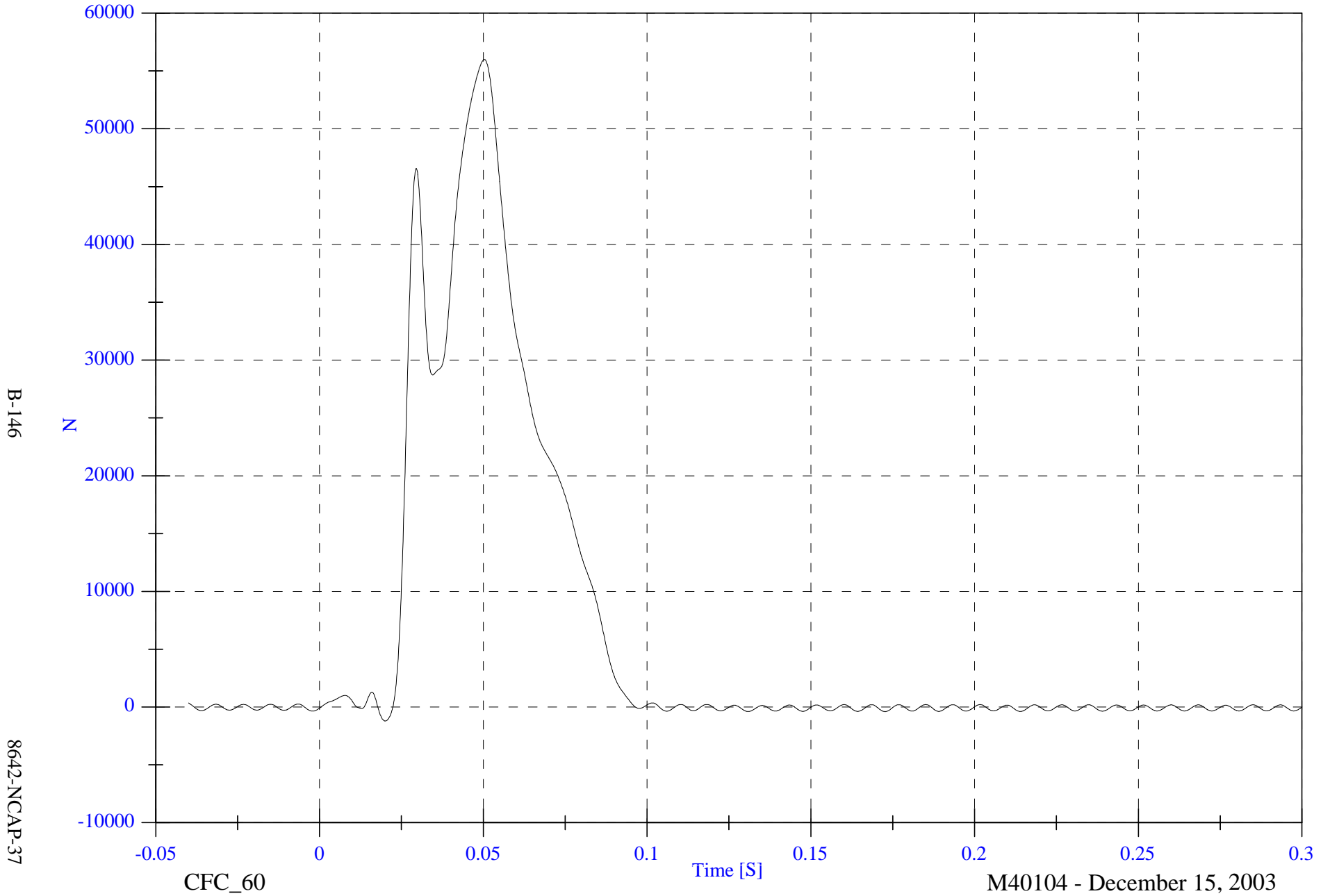
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A4 Fx

Max: 55986.9 [N] at 0.050 [S]

Min: -1207.5 [N] at 0.020 [S]

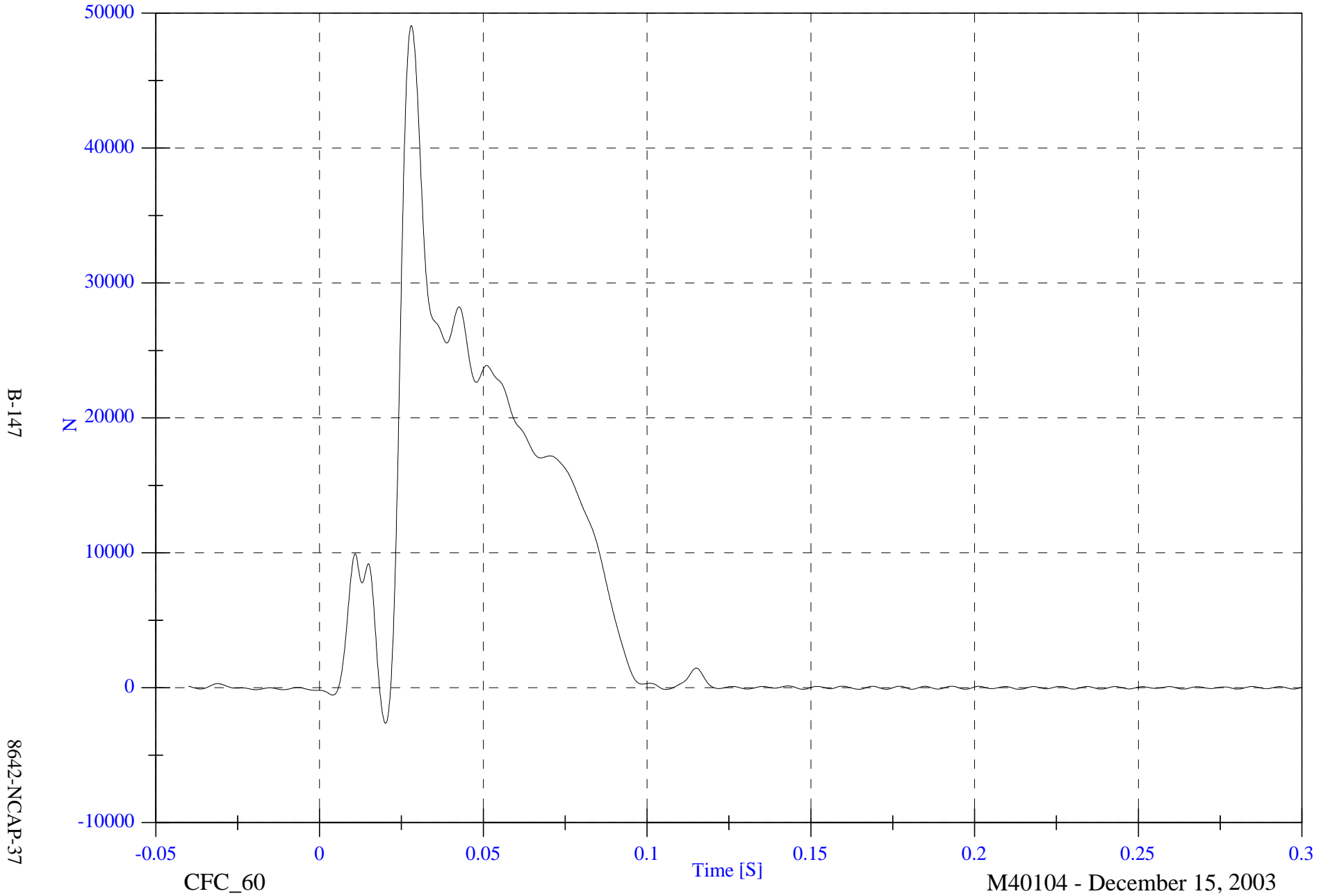


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A5 Fx

Max: 49077.2 [N] at 0.028 [S]

Min: -2637.8 [N] at 0.020 [S]

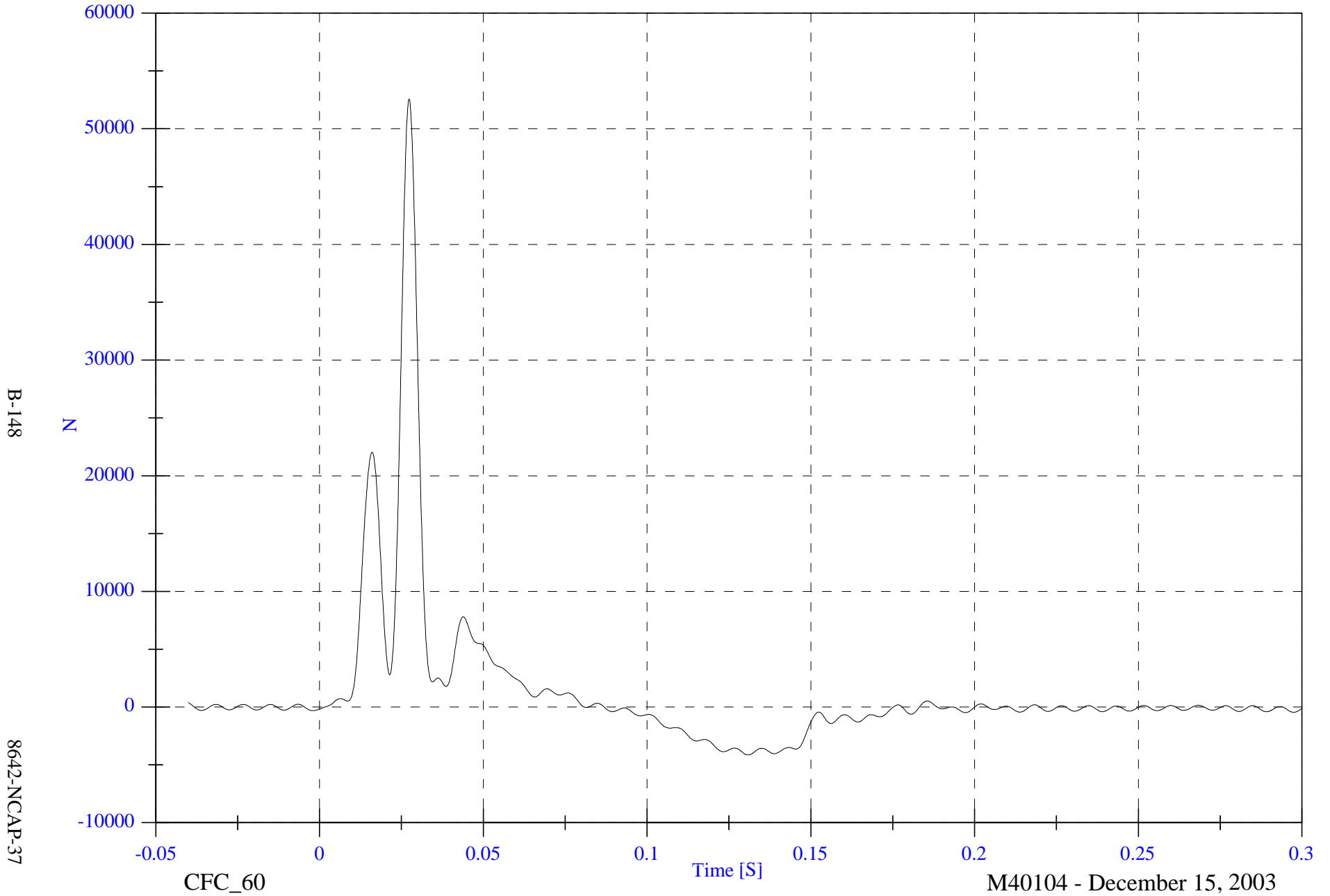


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A6 Fx

Max: 52571.4 [N] at 0.027 [S]

Min: -4138.5 [N] at 0.131 [S]

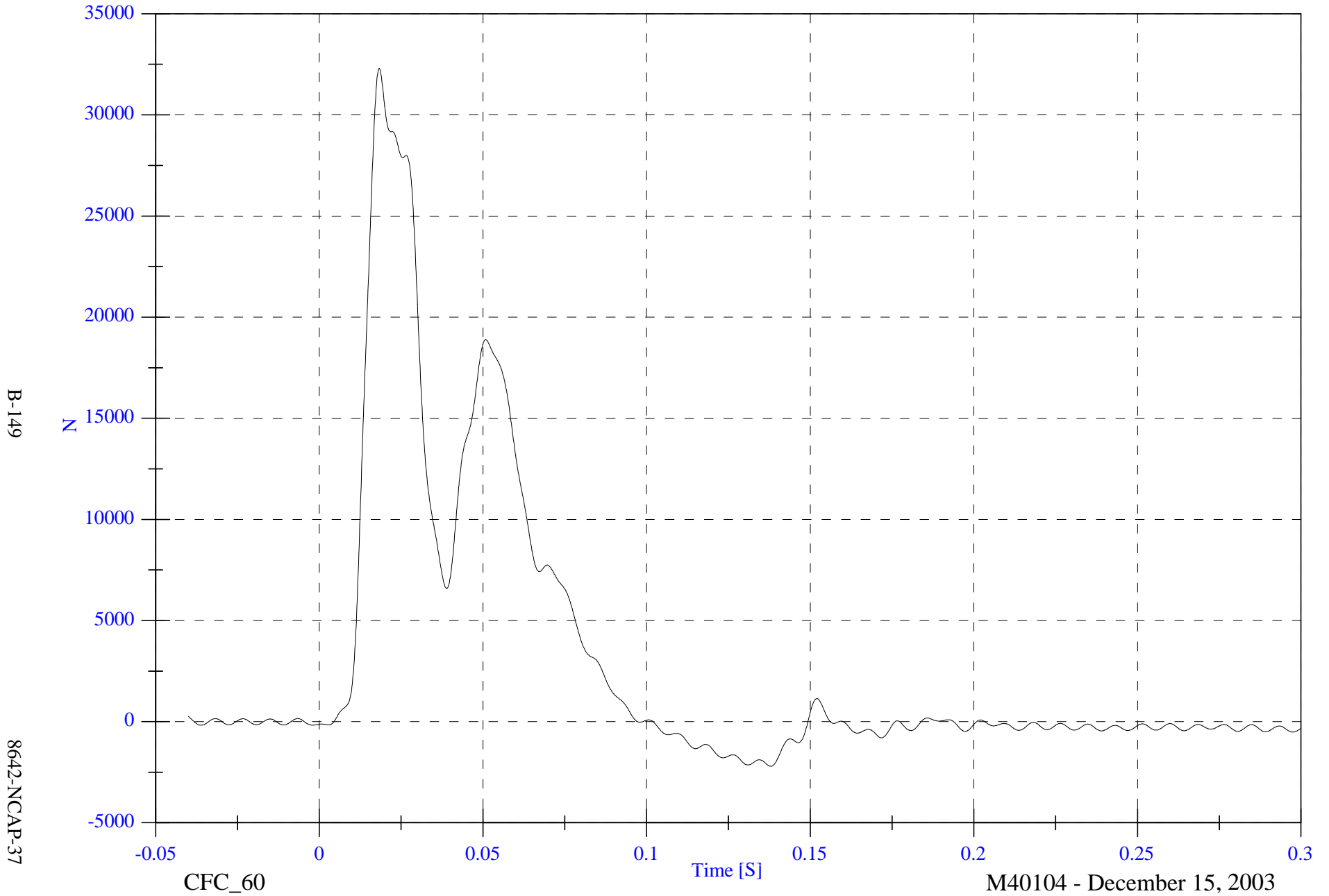


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A7 Fx

Max: 32297.2 [N] at 0.018 [S]

Min: -2209.7 [N] at 0.138 [S]

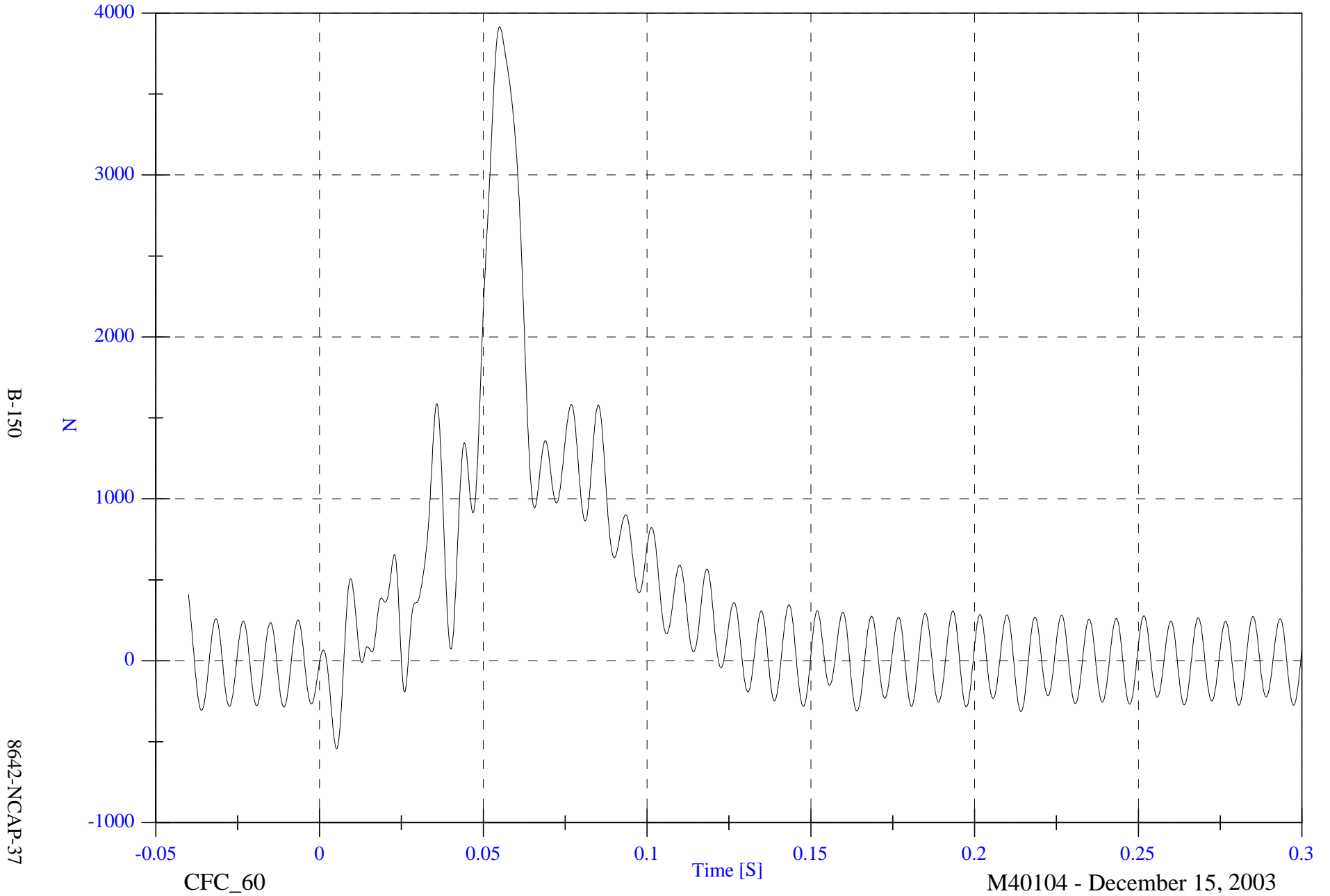


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell A8 Fx

Max: 3915.4 [N] at 0.055 [S]

Min: -542.3 [N] at 0.005 [S]

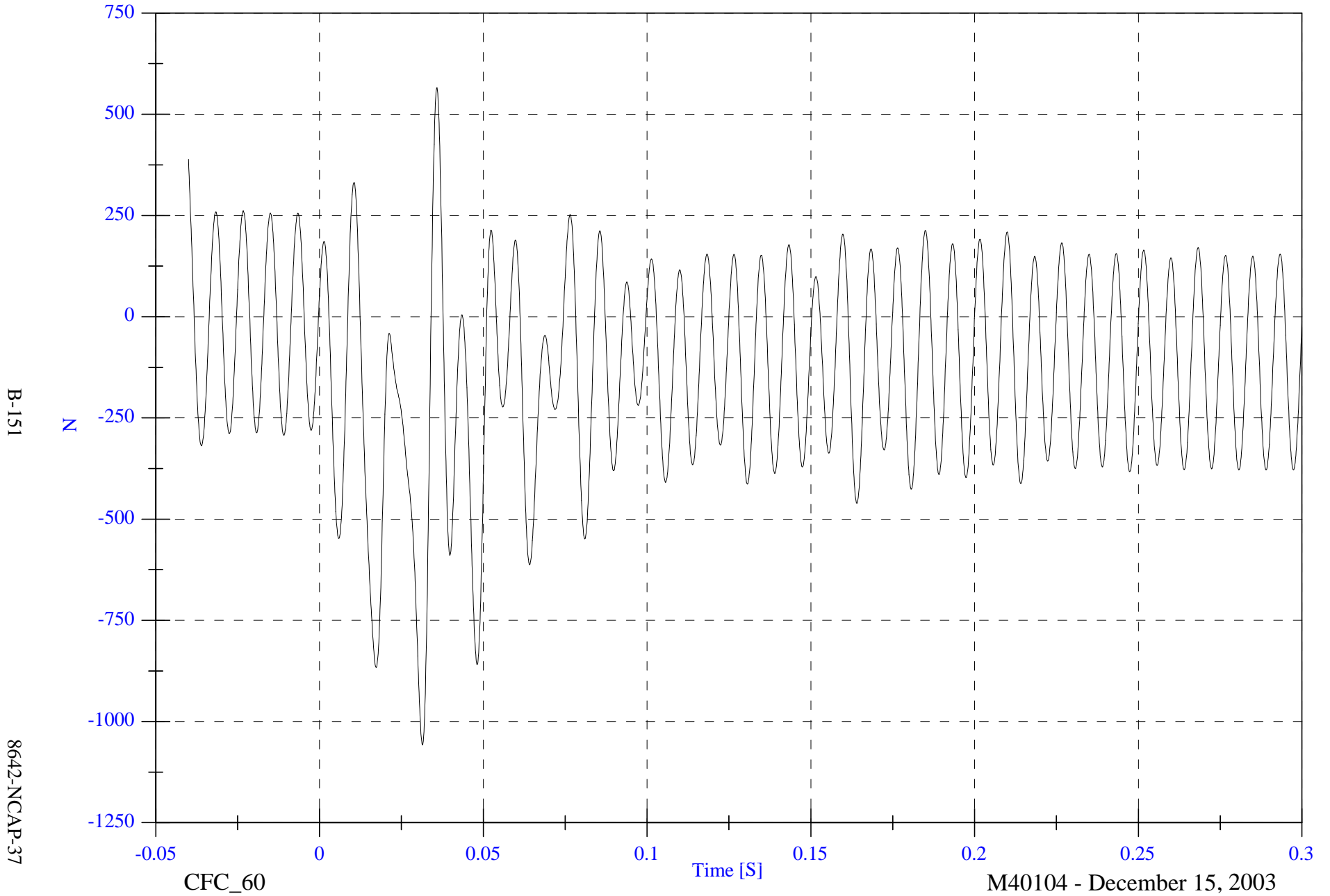


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 566.2 [N] at 0.036 [S]

Barrier Load Cell A9 Fx

Min: -1058.2 [N] at 0.031 [S]

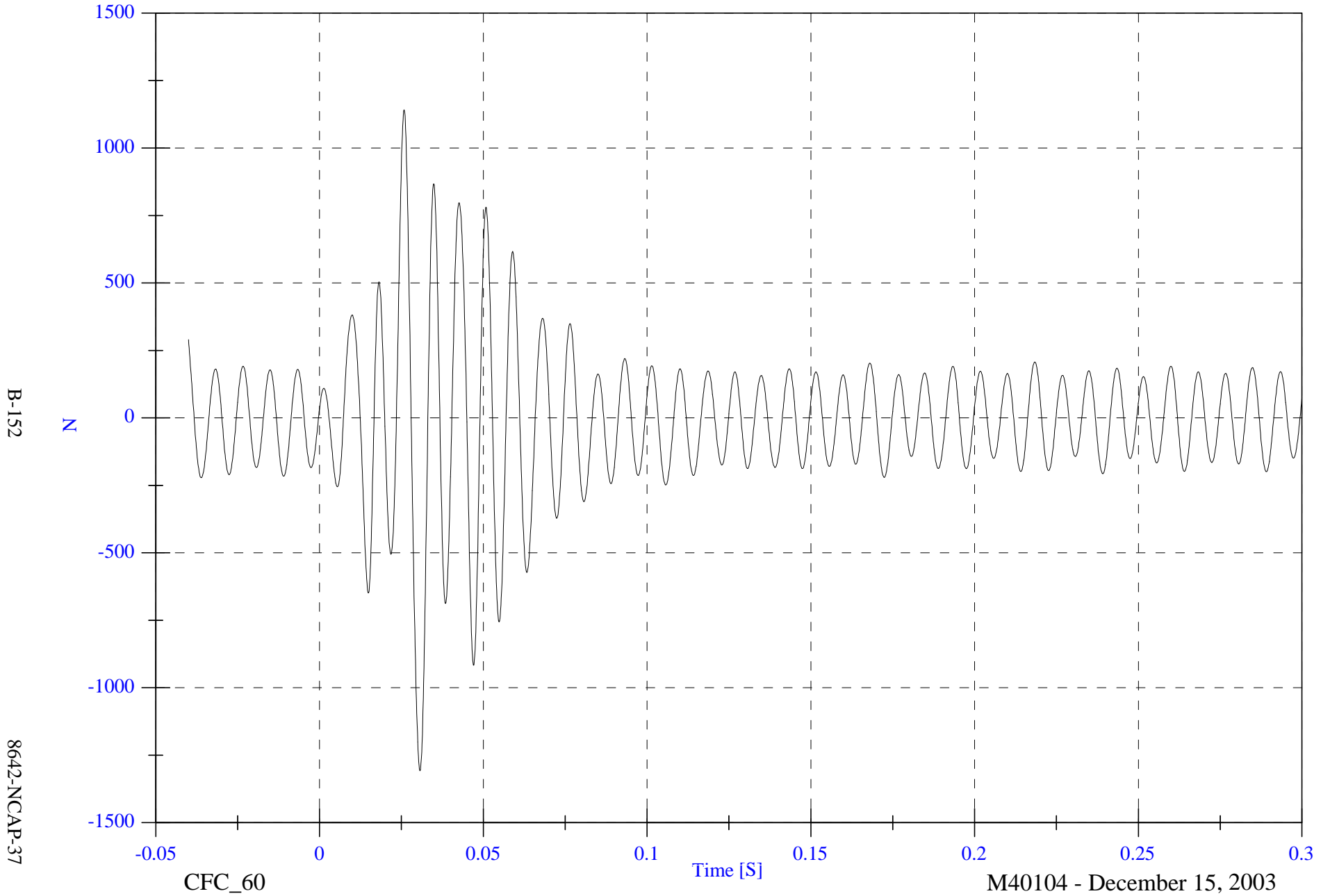


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1141.3 [N] at 0.026 [S]

Barrier Load Cell B1 Fx

Min: -1308.1 [N] at 0.031 [S]

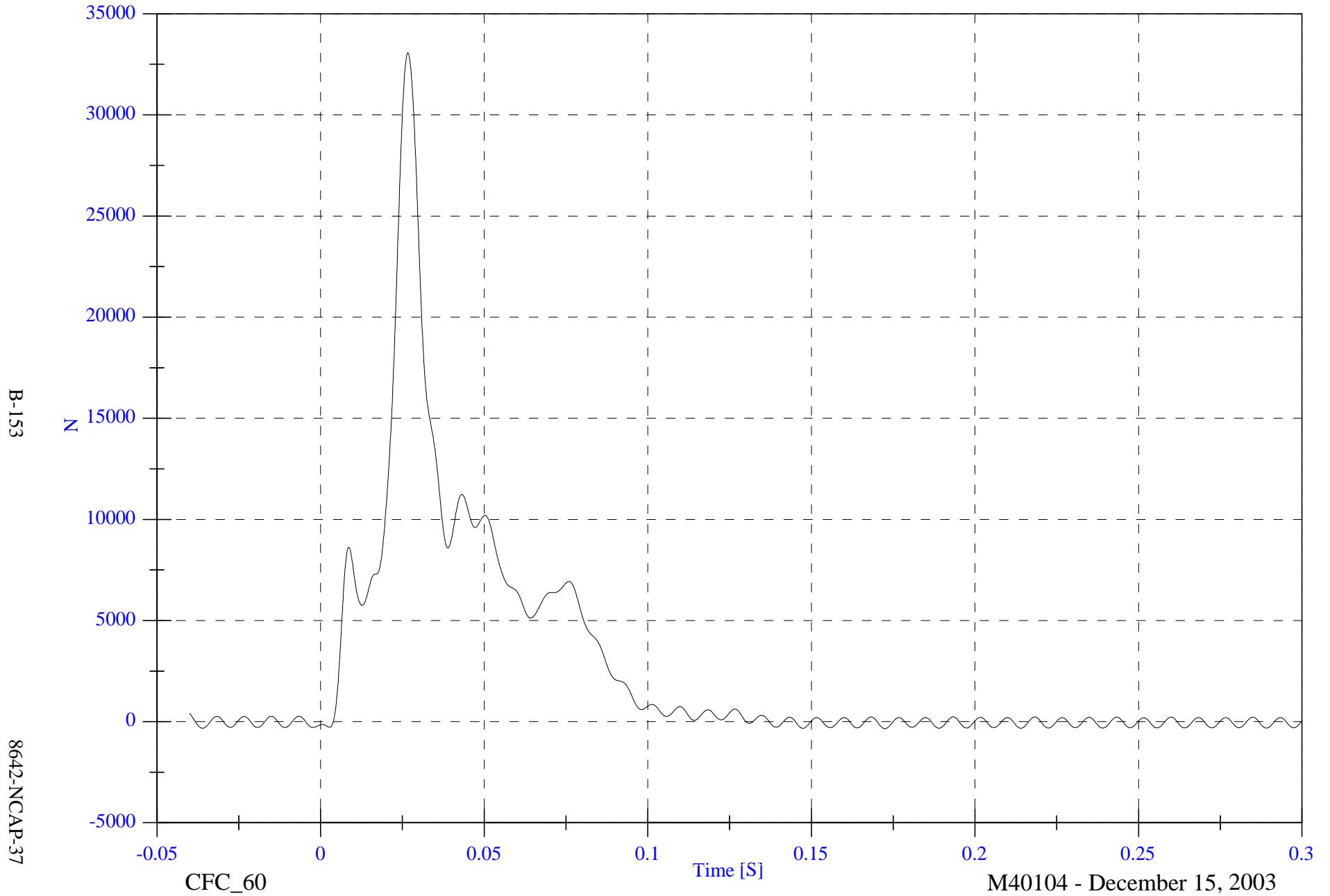


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 33073.4 [N] at 0.027 [S]

Barrier Load Cell B2 Fx

Min: -343.5 [N] at 0.172 [S]



B-153

8642-NCAP-37

CFC_60

Time [S]

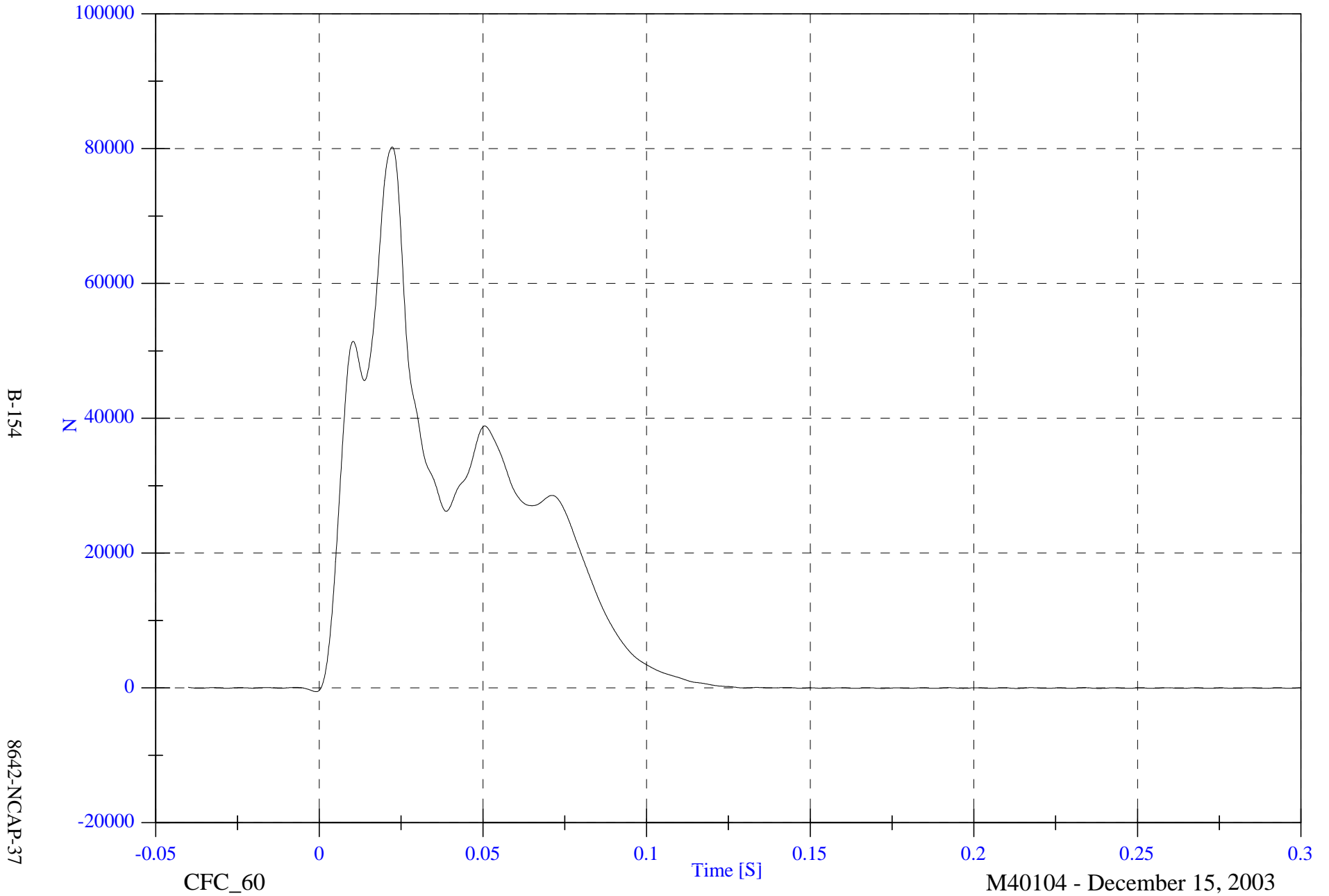
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell B3 Fx

Max: 80242.1 [N] at 0.022 [S]

Min: -556.9 [N] at -0.001 [S]



B-154

8642-NCAP-37

CFC_60

Time [S]

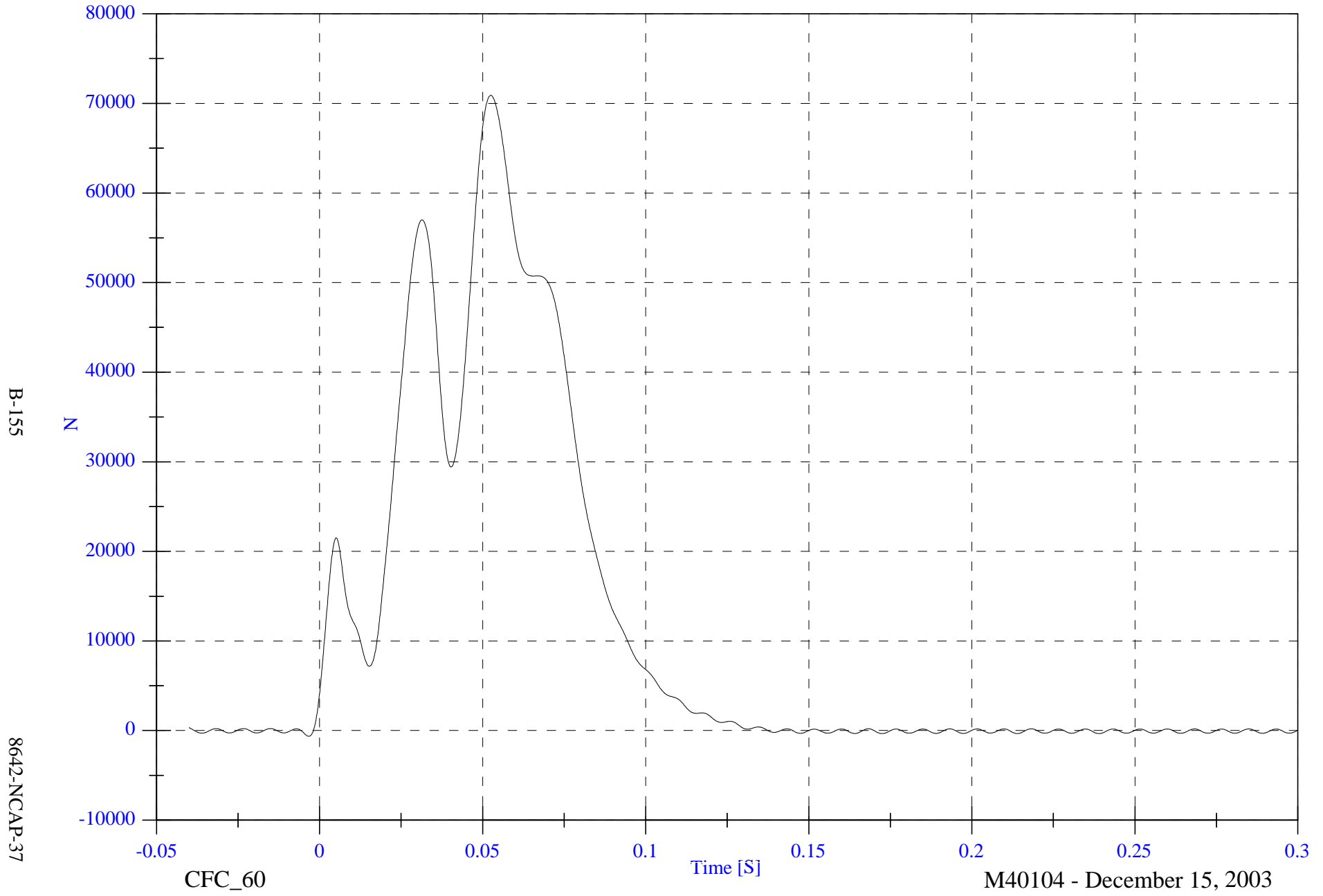
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 70895.6 [N] at 0.052 [S]

Min: -636.0 [N] at -0.003 [S]

Barrier Load Cell B4 Fx



B-155

8642-NCAP-37

CFC_60

Time [S]

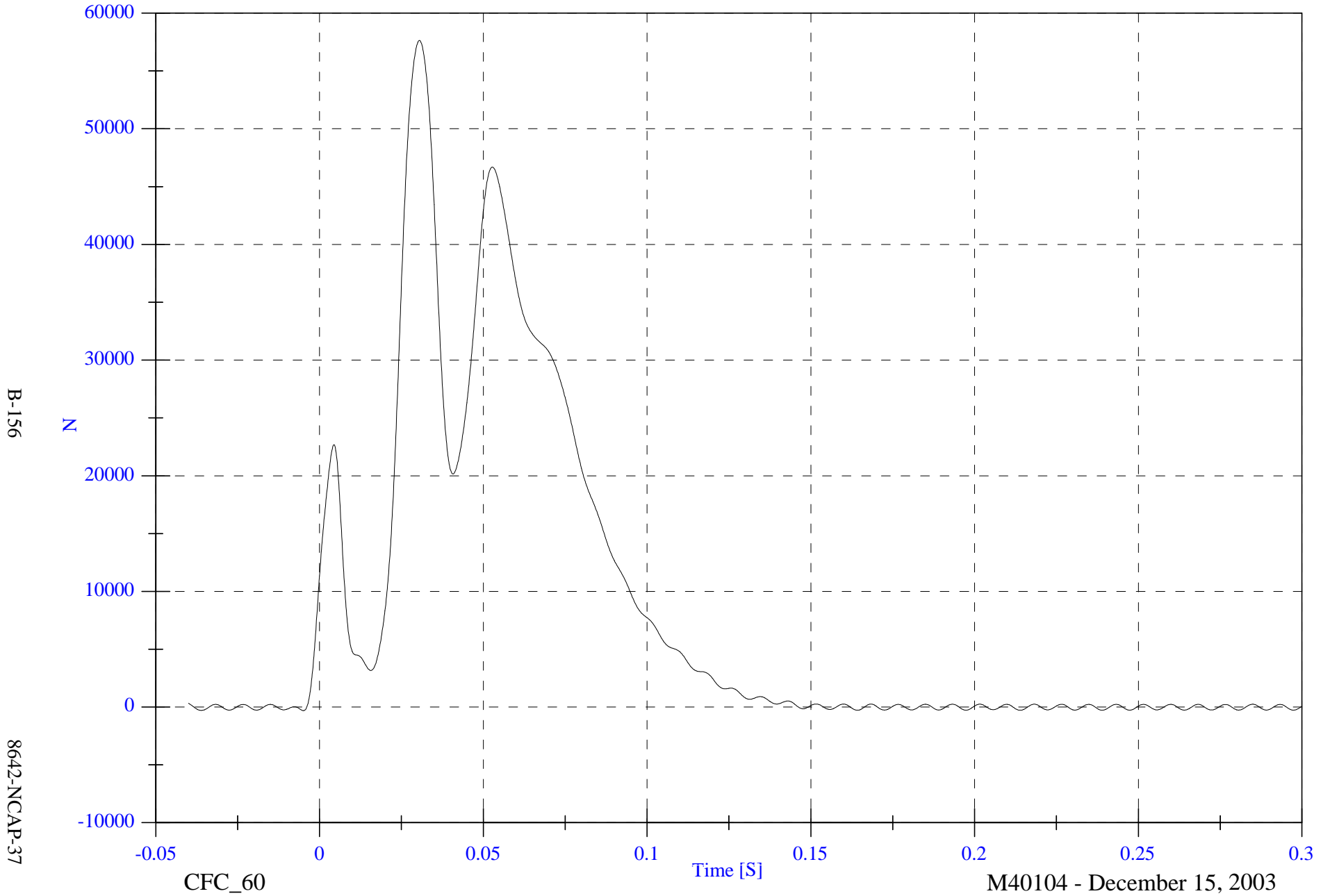
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell B5 Fx

Max: 57638.0 [N] at 0.030 [S]

Min: -315.4 [N] at -0.005 [S]



B-156

8642-NCAP-37

CFC_60

Time [S]

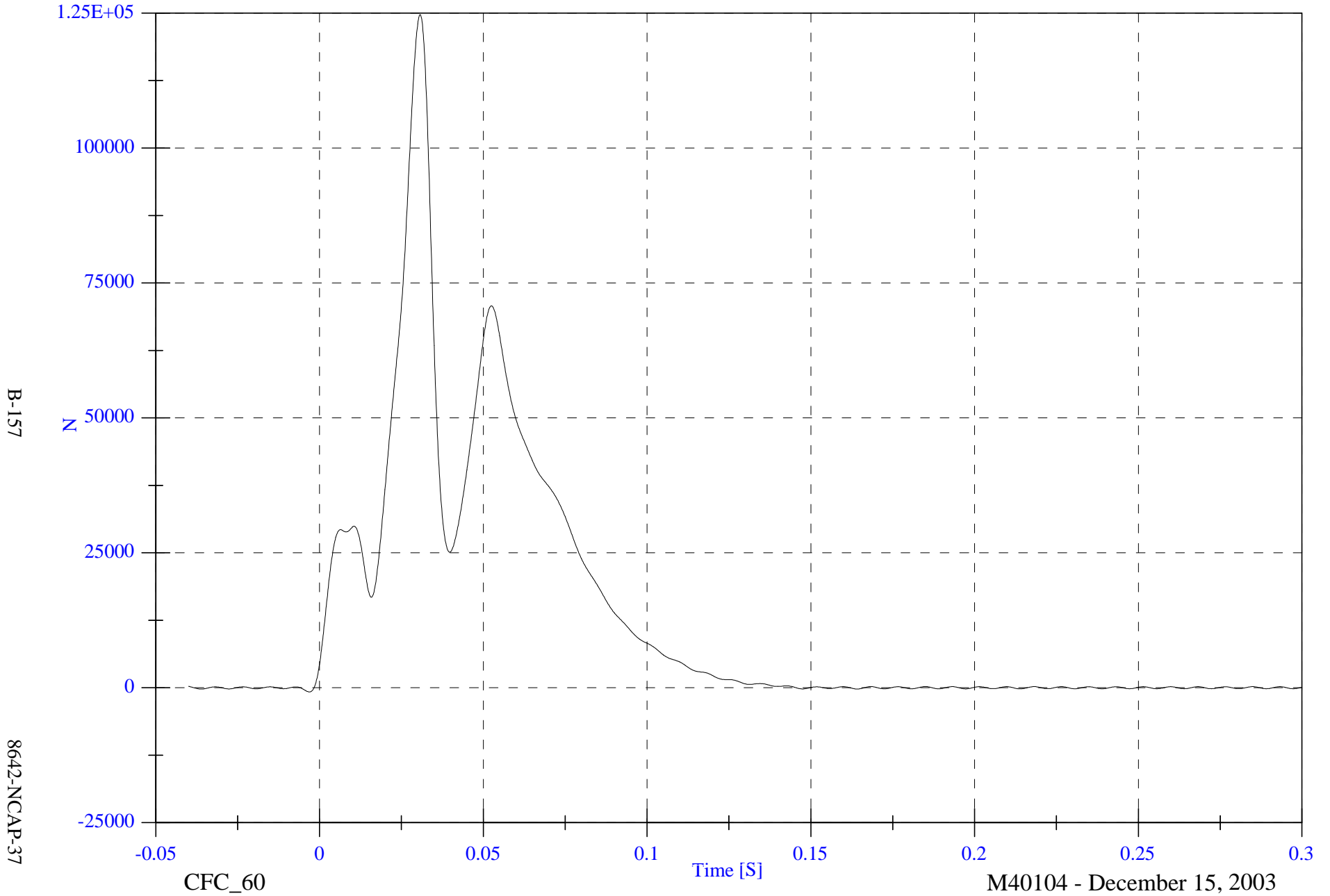
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell B6 Fx

Max: 124730.2 [N] at 0.031 [S]

Min: -779.6 [N] at -0.003 [S]

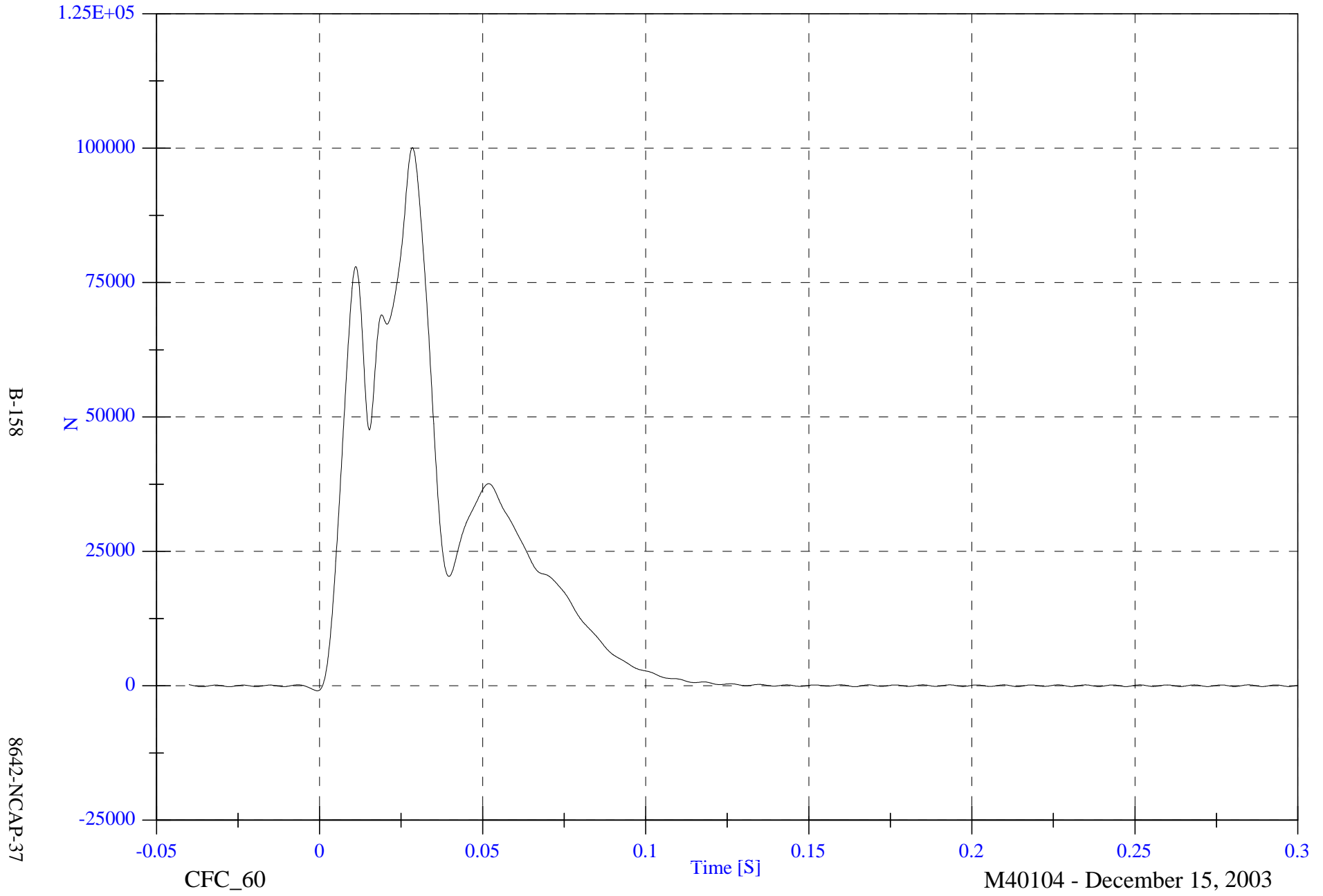


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 100097.6 [N] at 0.028 [S]

Barrier Load Cell B7 Fx

Min: -919.8 [N] at -0.001 [S]



B-158

8642-NCAP-37

CFC_60

Time [S]

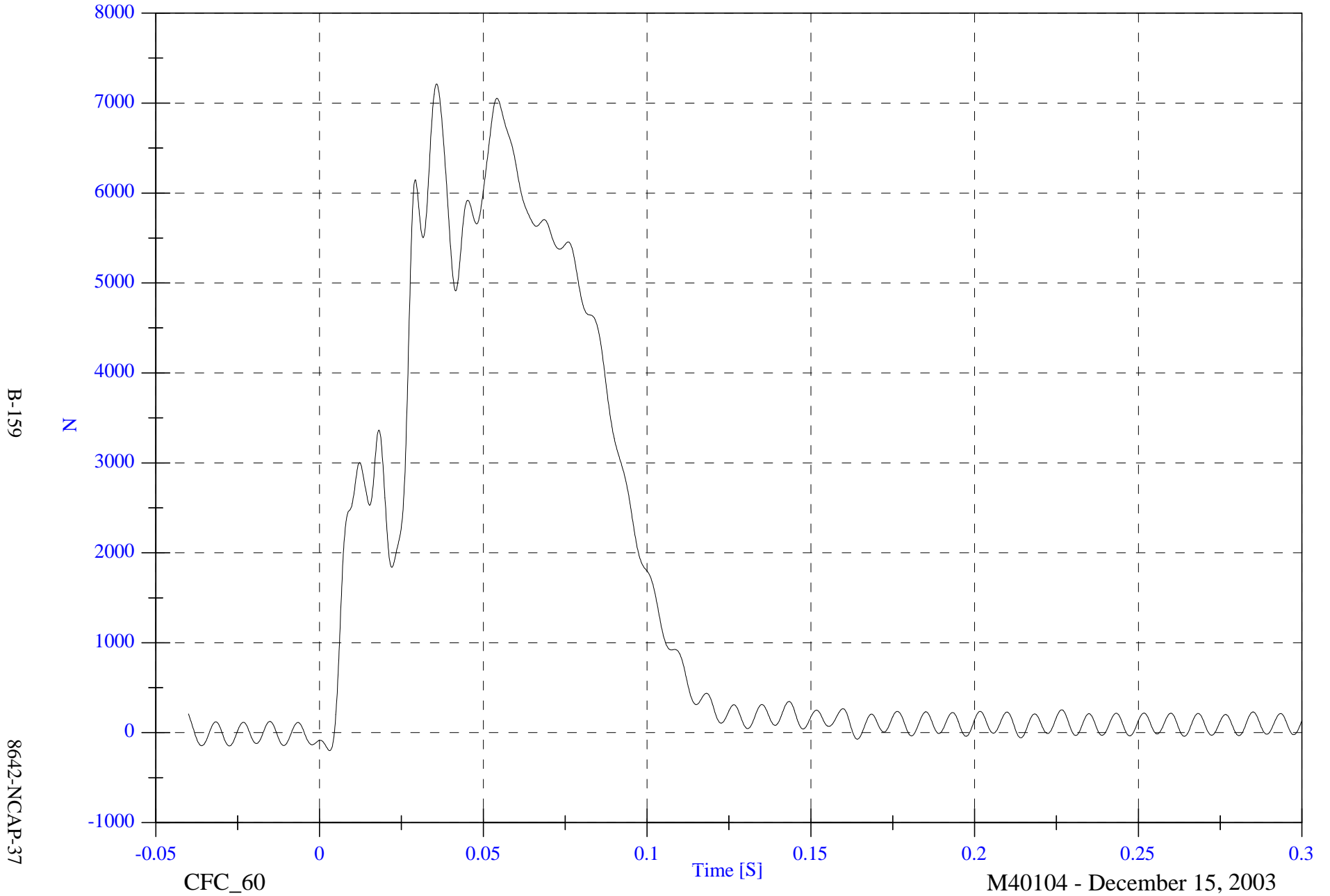
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell B8 Fx

Max: 7212.2 [N] at 0.036 [S]

Min: -198.4 [N] at 0.003 [S]



B-159

8642-NCAP-37

CFC_60

Time [S]

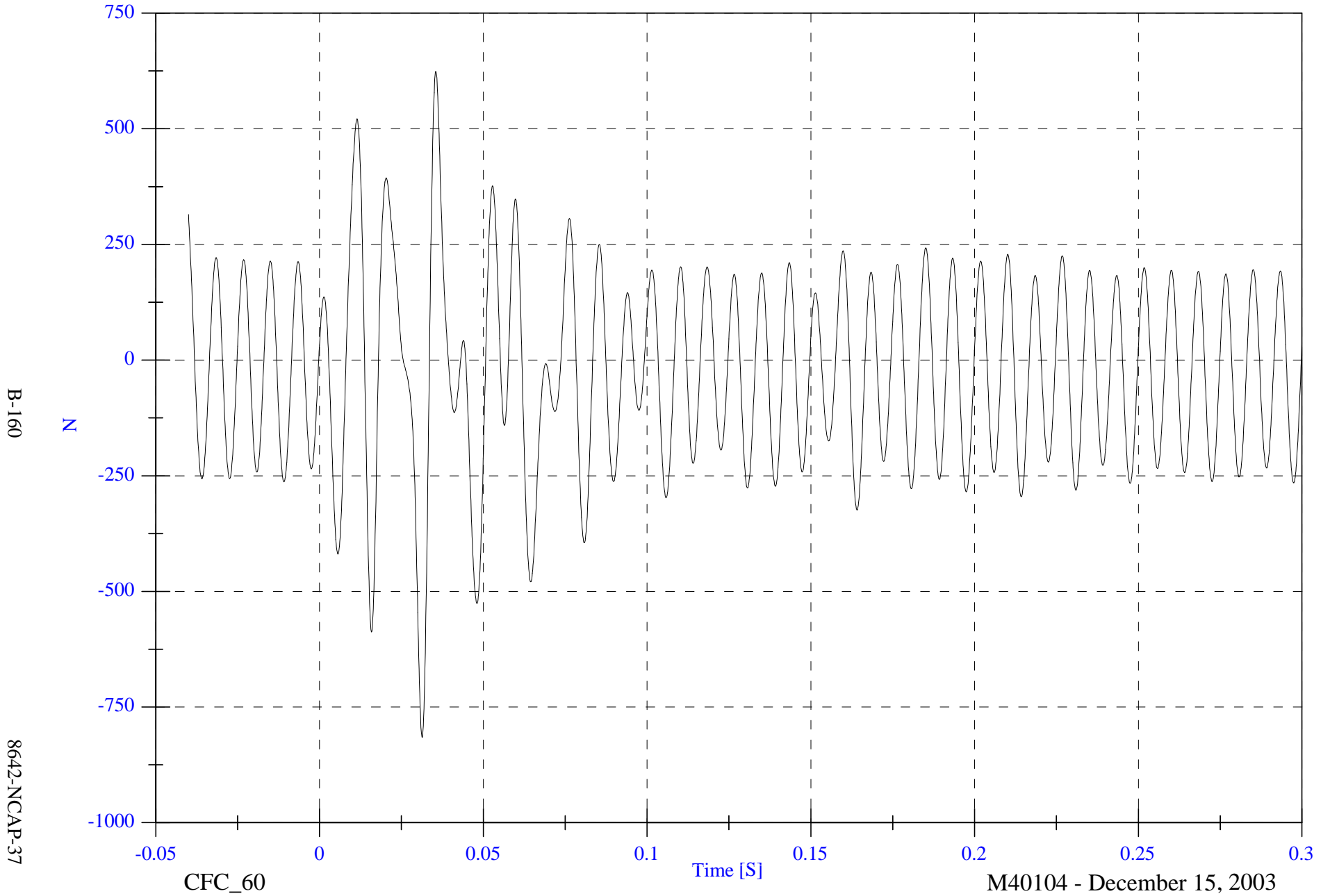
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 624.4 [N] at 0.035 [S]

Barrier Load Cell B9 Fx

Min: -815.4 [N] at 0.031 [S]



B-160

8642-NCAP-37

CFC_60

Time [S]

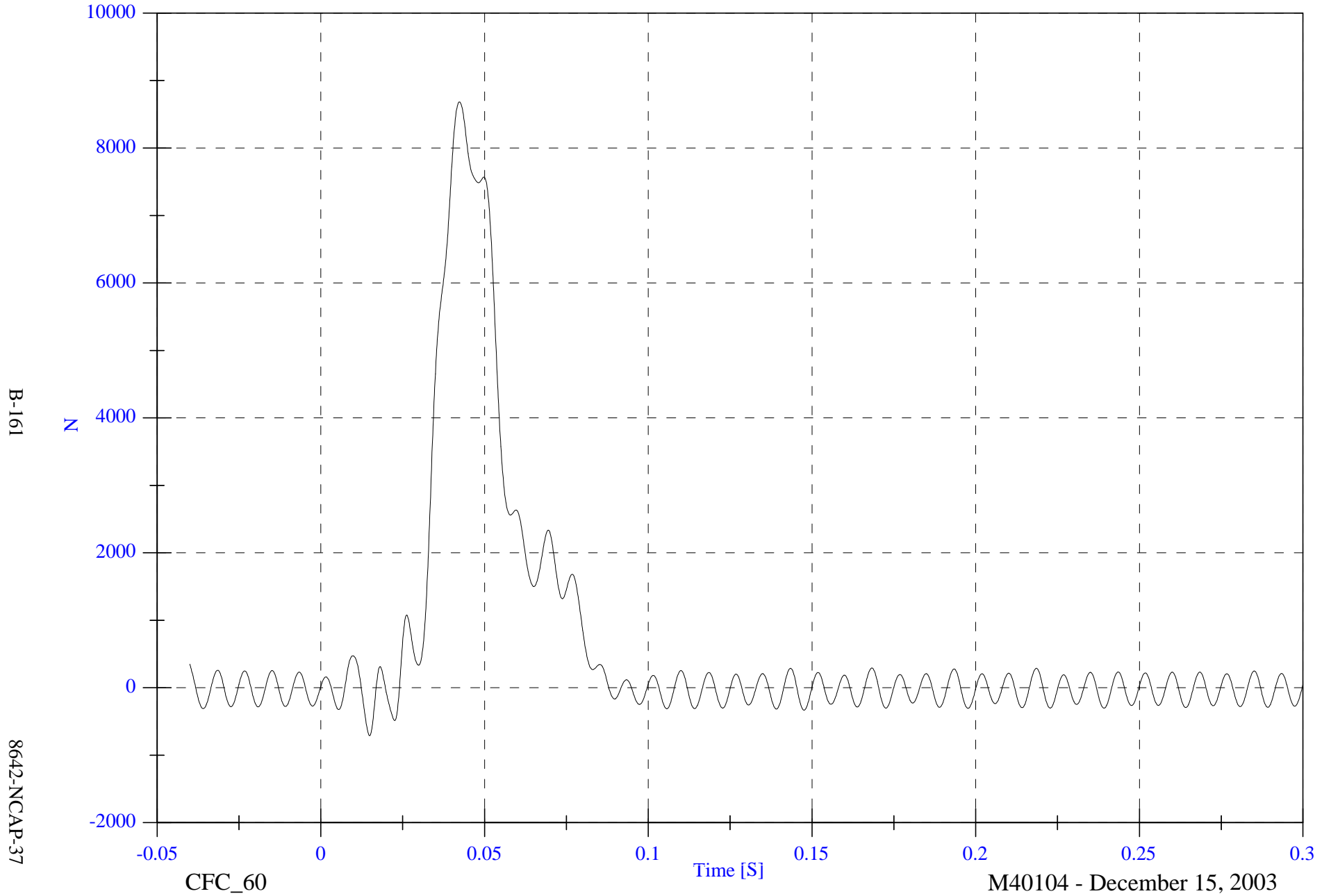
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 8683.4 [N] at 0.042 [S]

Barrier Load Cell C1 Fx

Min: -709.1 [N] at 0.015 [S]



B-161

8642-NCAP-37

CFC_60

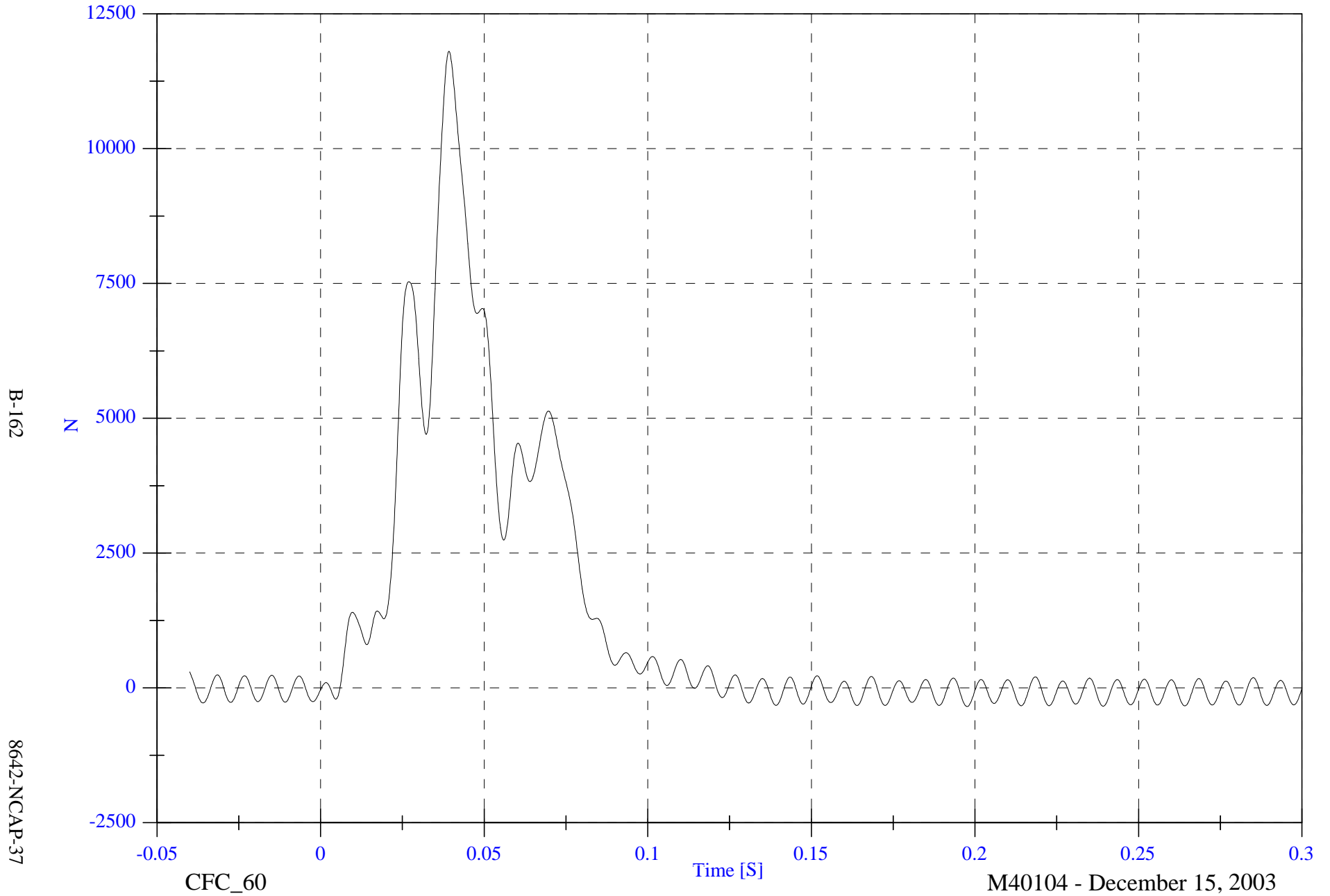
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 11803.8 [N] at 0.039 [S]

Barrier Load Cell C2 Fx

Min: -344.5 [N] at 0.198 [S]

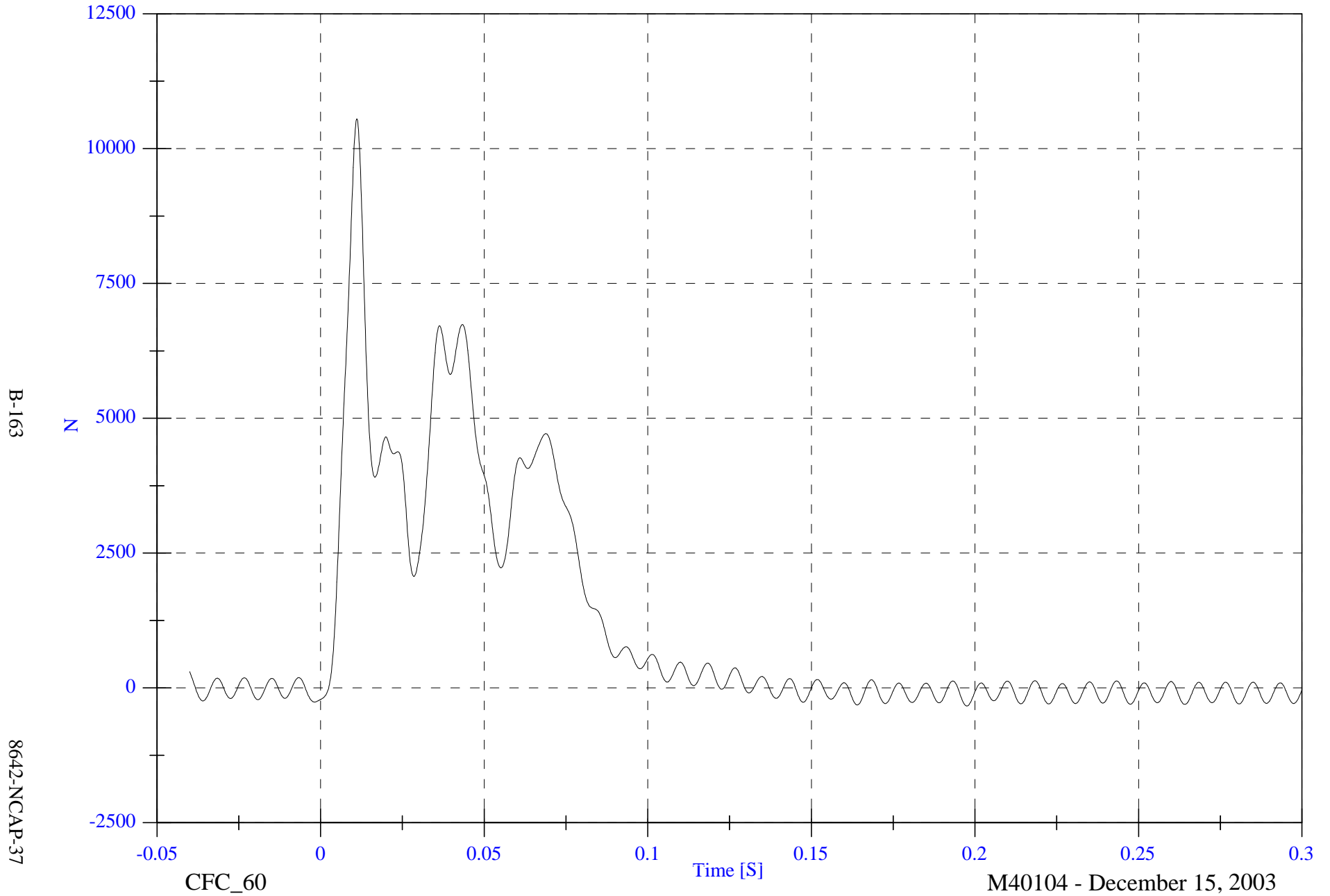


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 10551.0 [N] at 0.011 [S]

Barrier Load Cell C3 Fx

Min: -334.8 [N] at 0.197 [S]



B-163

8642-NCAP-37

CFC_60

Time [S]

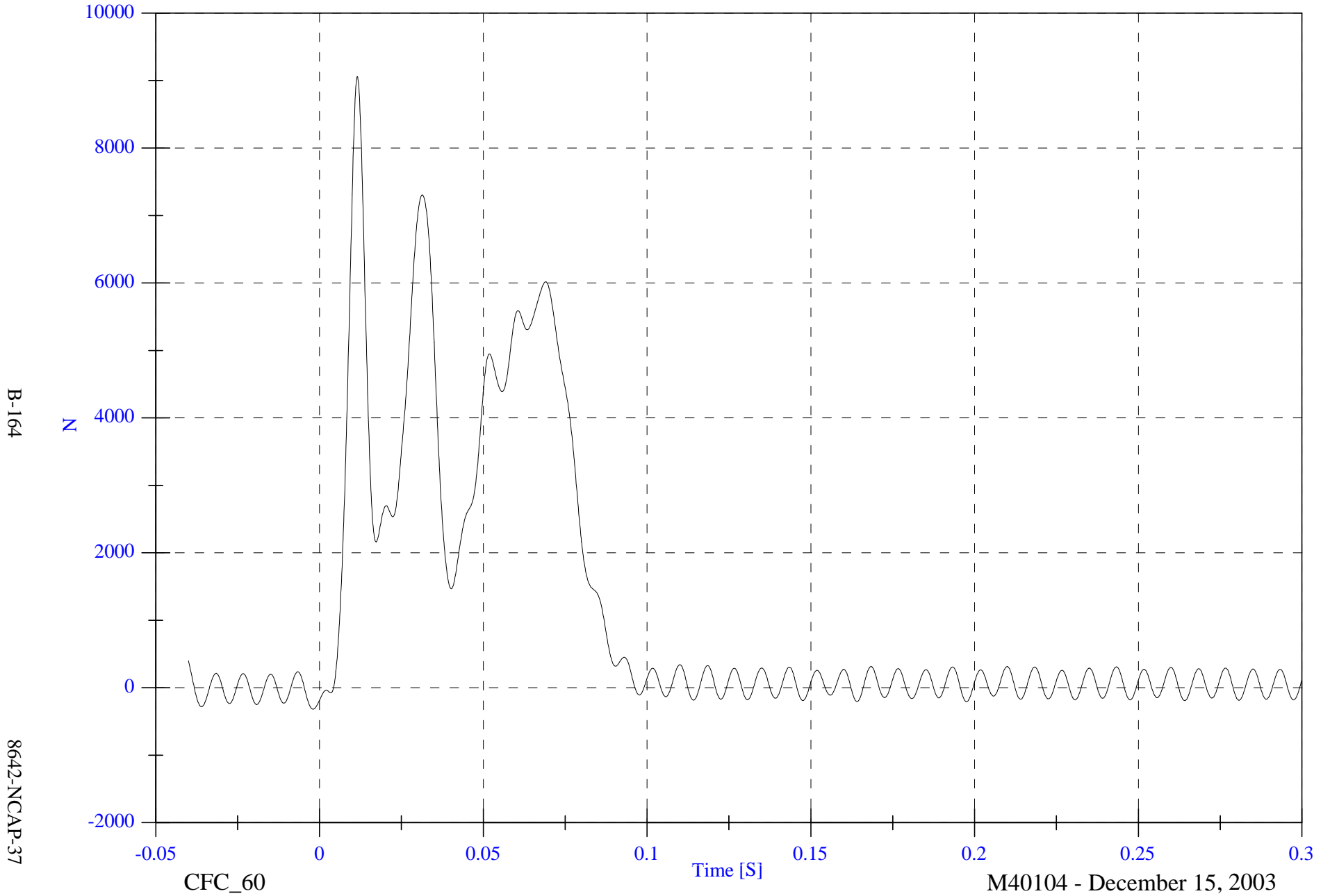
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell C4 Fx

Max: 9060.6 [N] at 0.012 [S]

Min: -318.0 [N] at -0.002 [S]



B-164

8642-NCAP-37

CFC_60

Time [S]

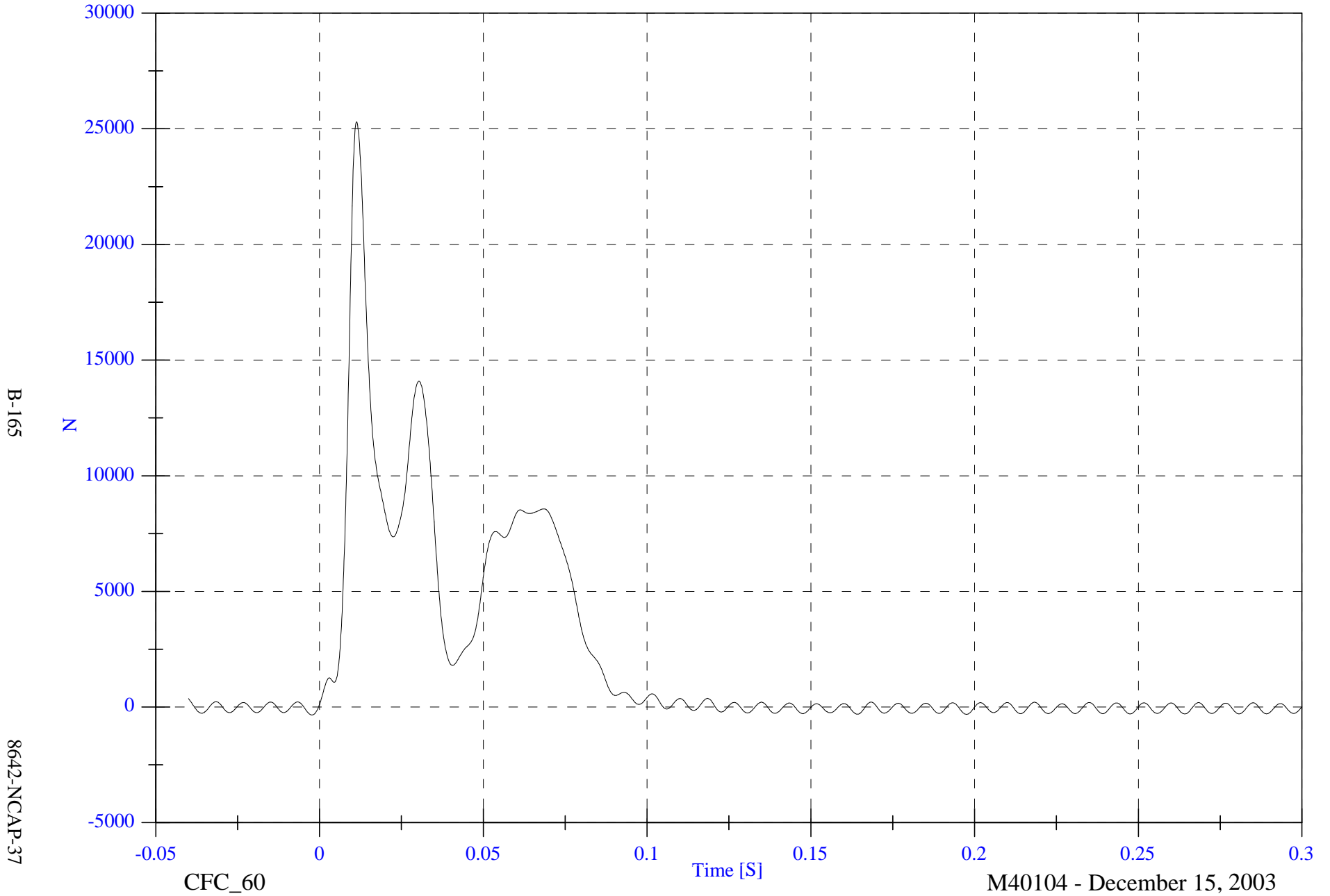
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell C5 Fx

Max: 25300.0 [N] at 0.011 [S]

Min: -343.9 [N] at -0.002 [S]



B-165

8642-NCAP-37

CFC_60

Time [S]

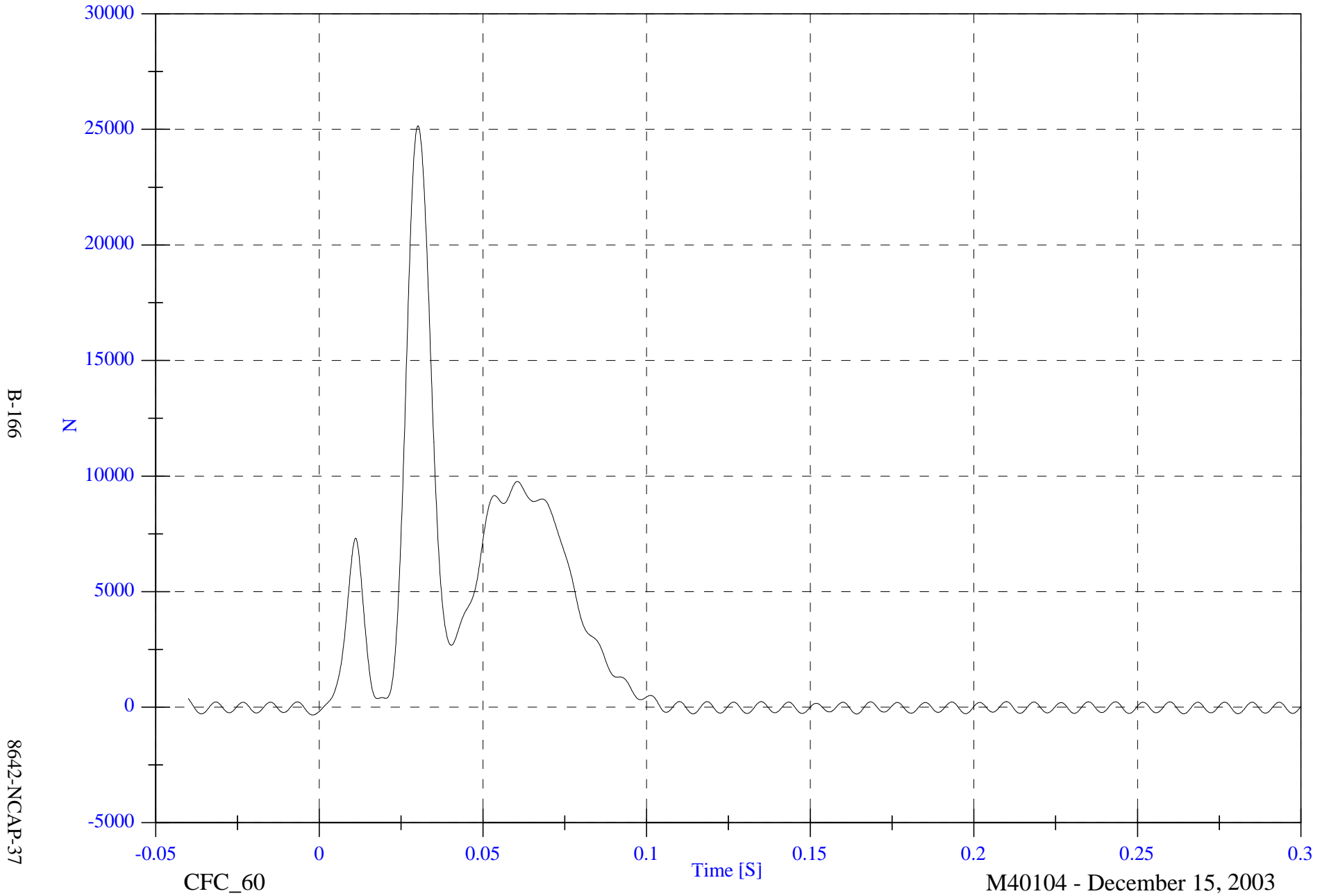
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 25154.8 [N] at 0.030 [S]

Barrier Load Cell C6 Fx

Min: -336.6 [N] at -0.002 [S]



B-166

8642-NCAP-37

CFC_60

Time [S]

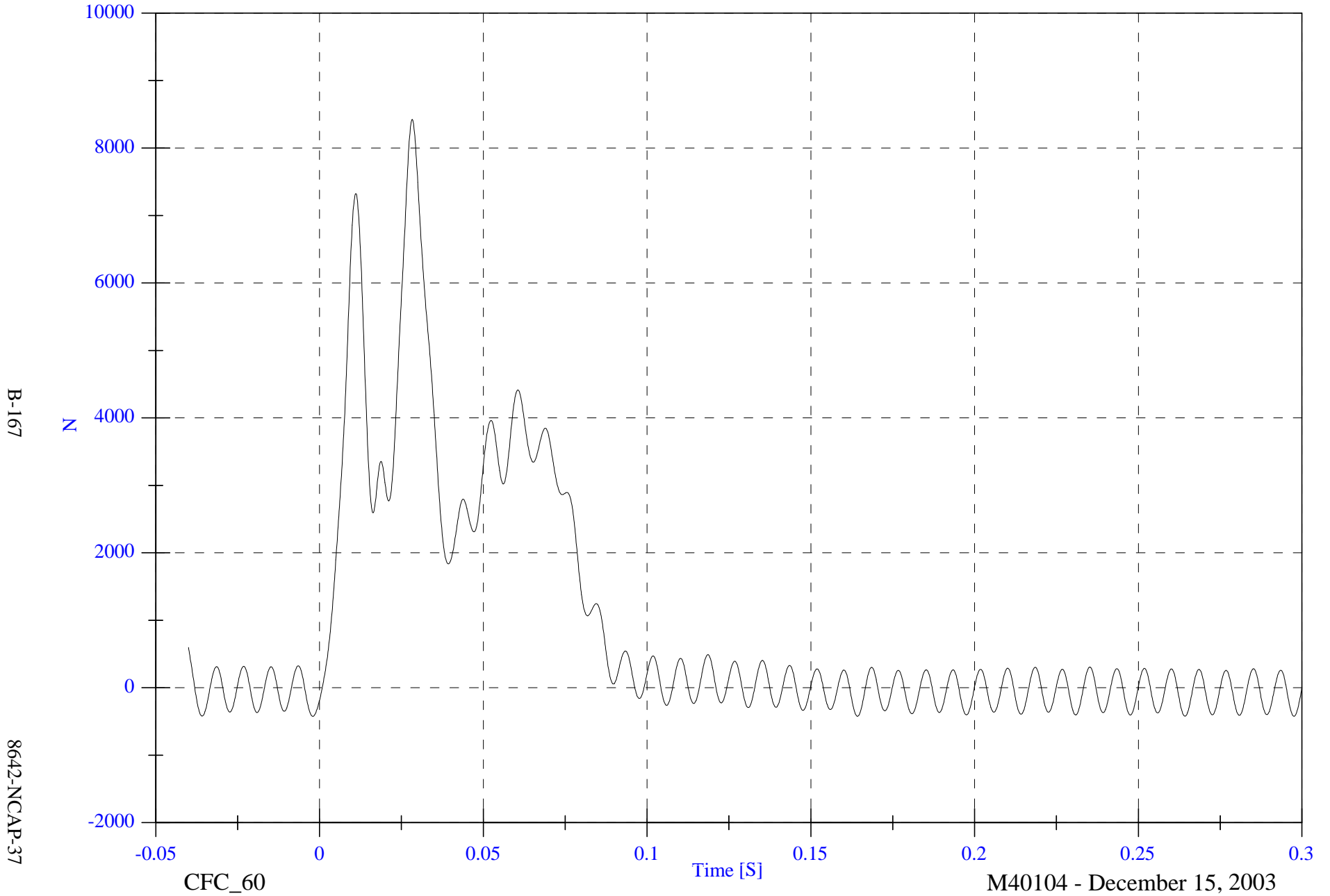
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell C7 Fx

Max: 8424.2 [N] at 0.028 [S]

Min: -423.4 [N] at -0.002 [S]



B-167

8642-NCAP-37

CFC_60

Time [S]

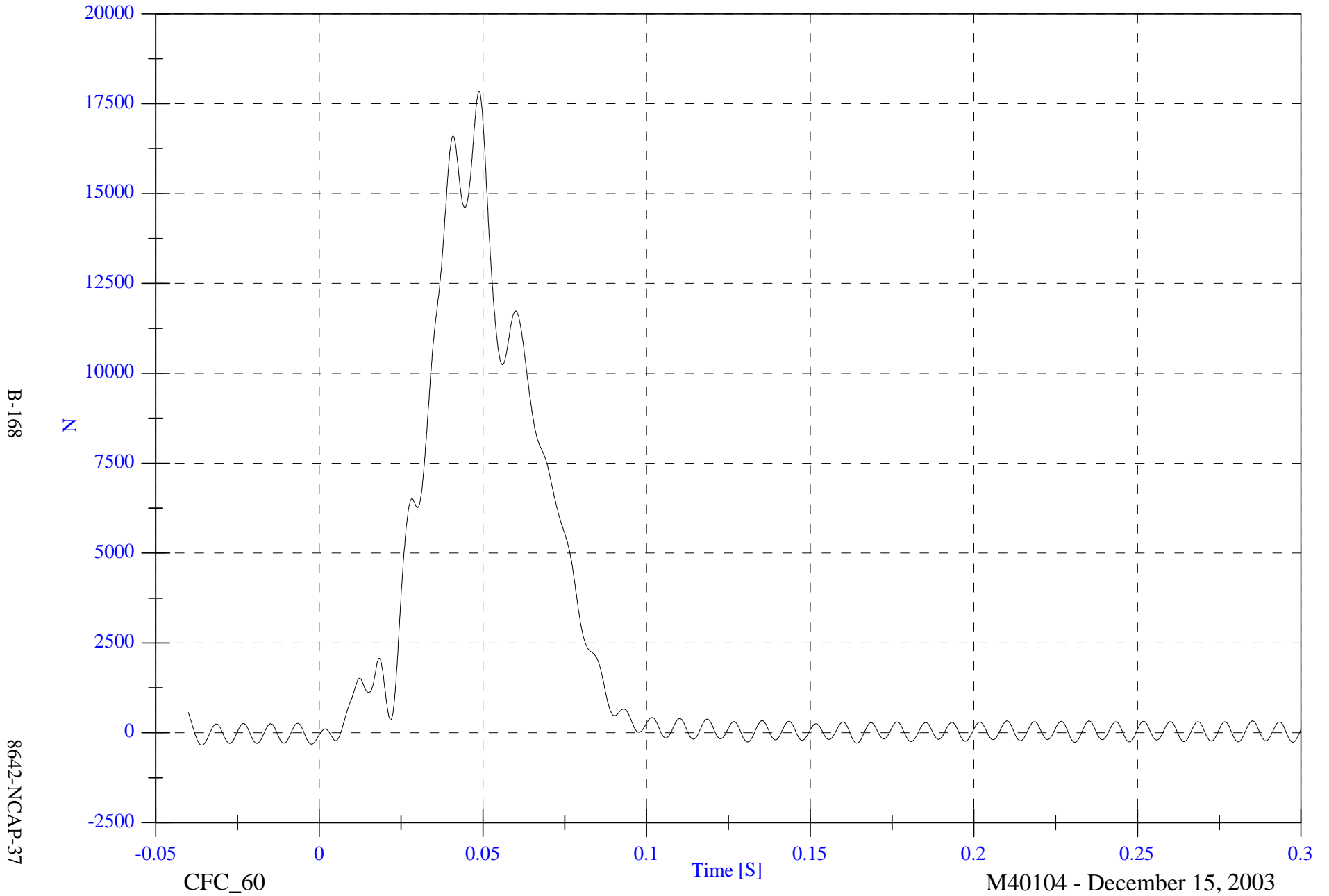
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 17845.2 [N] at 0.049 [S]

Barrier Load Cell C8 Fx

Min: -342.0 [N] at -0.036 [S]



B-168

8642-NCAP-37

CFC_60

Time [S]

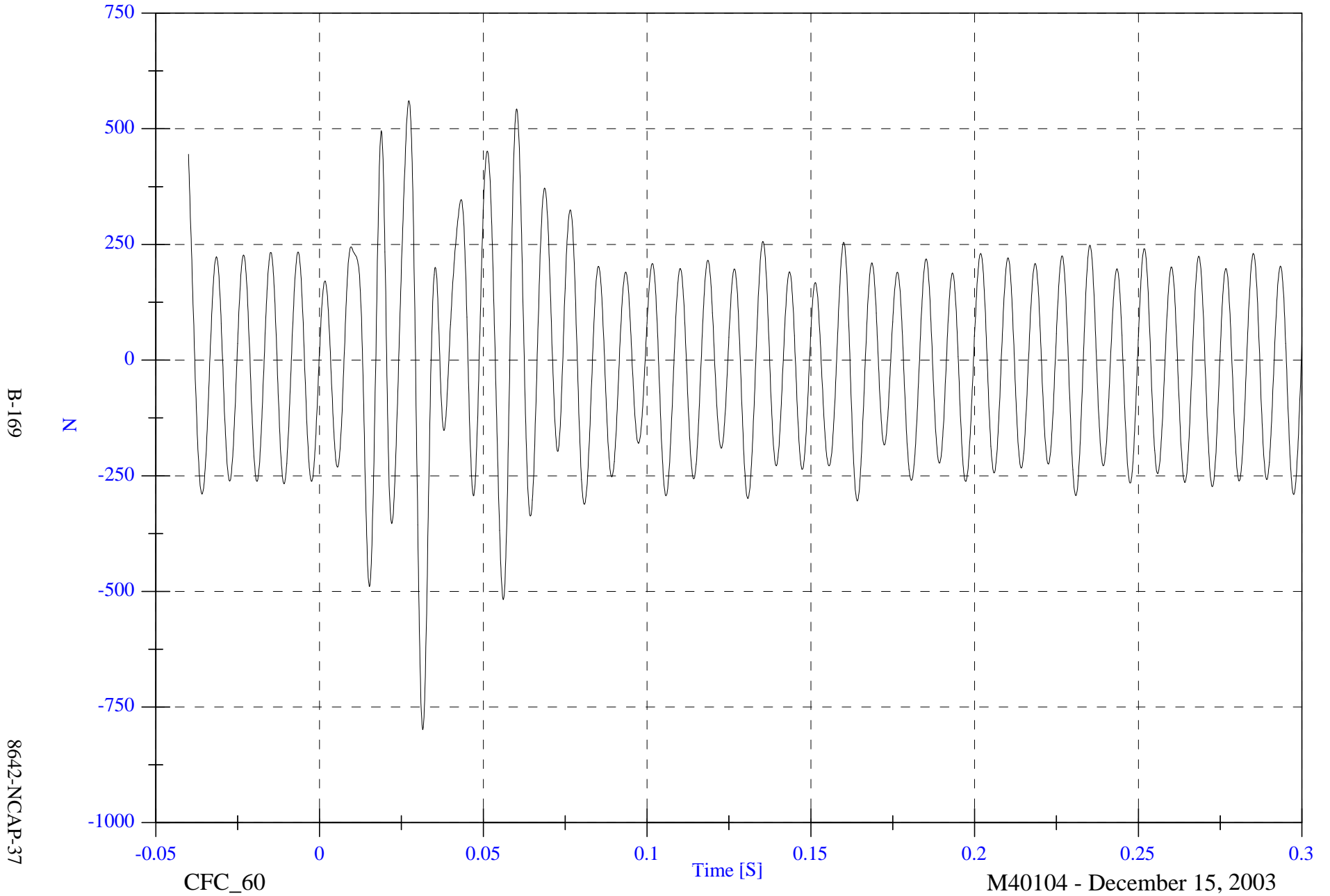
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 560.9 [N] at 0.027 [S]

Barrier Load Cell C9 Fx

Min: -798.7 [N] at 0.031 [S]

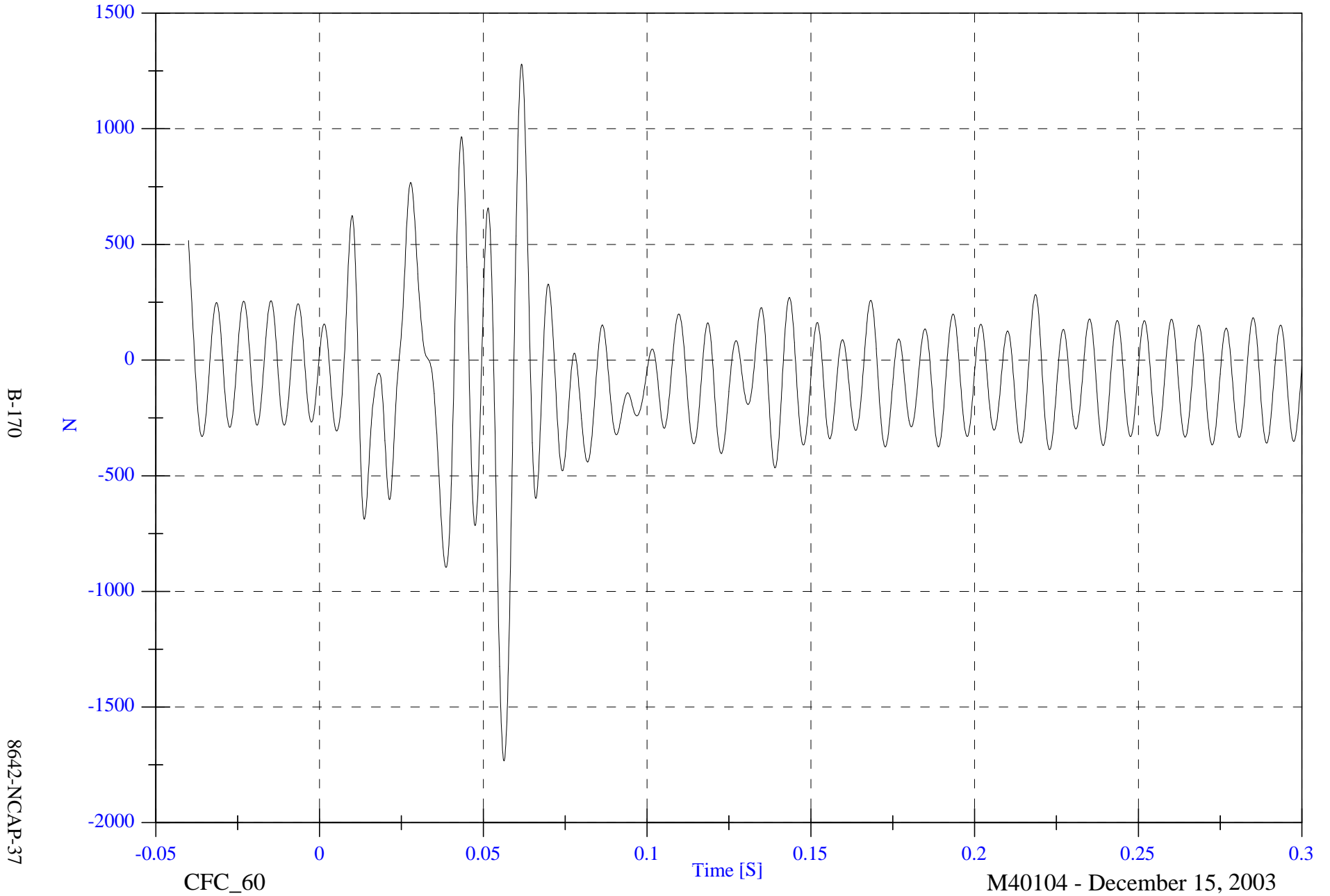


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D1 Fx

Max: 1279.4 [N] at 0.062 [S]

Min: -1732.7 [N] at 0.056 [S]

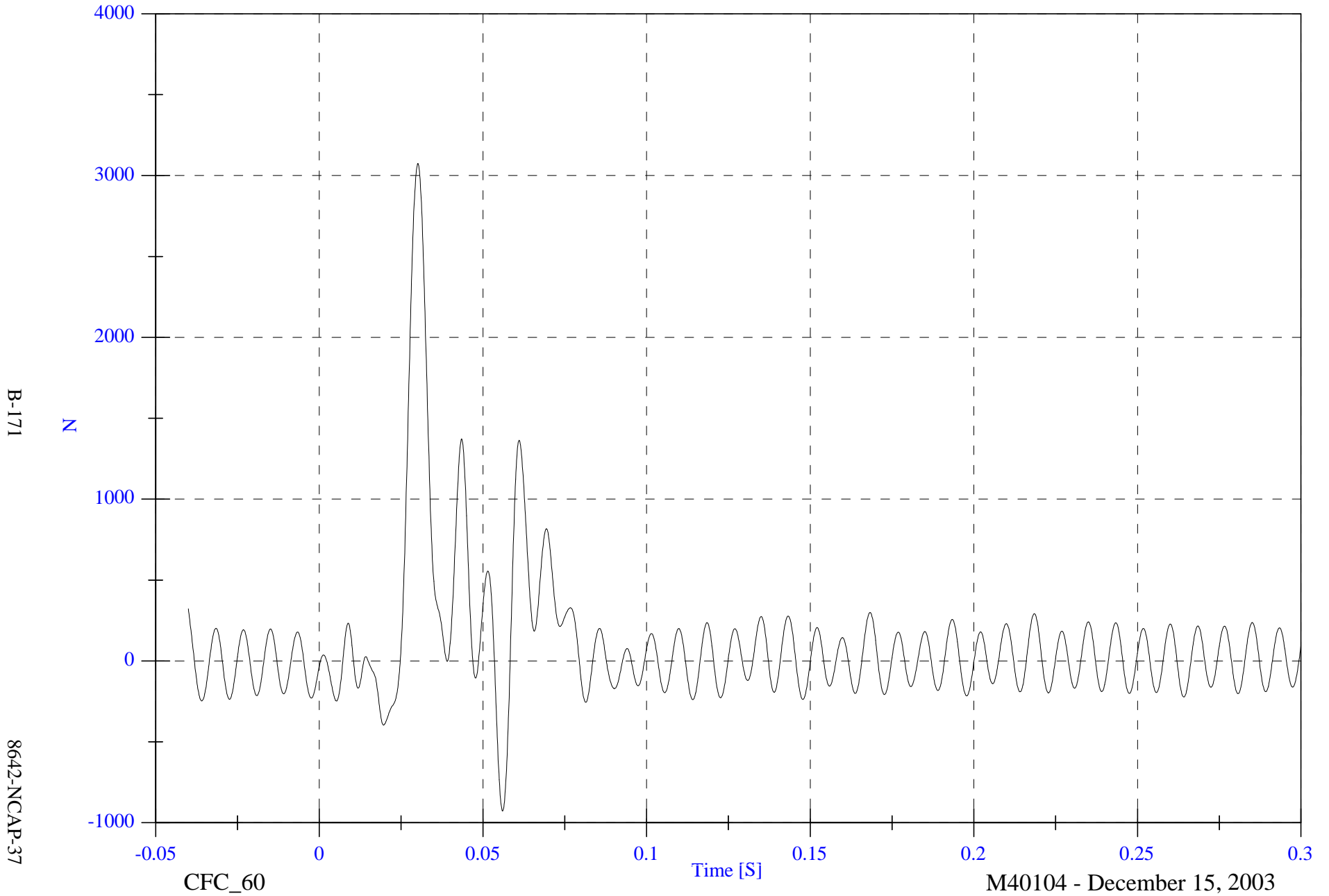


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 3074.6 [N] at 0.030 [S]

Barrier Load Cell D2 Fx

Min: -927.6 [N] at 0.056 [S]



B-171

8642-NCAP-37

CFC_60

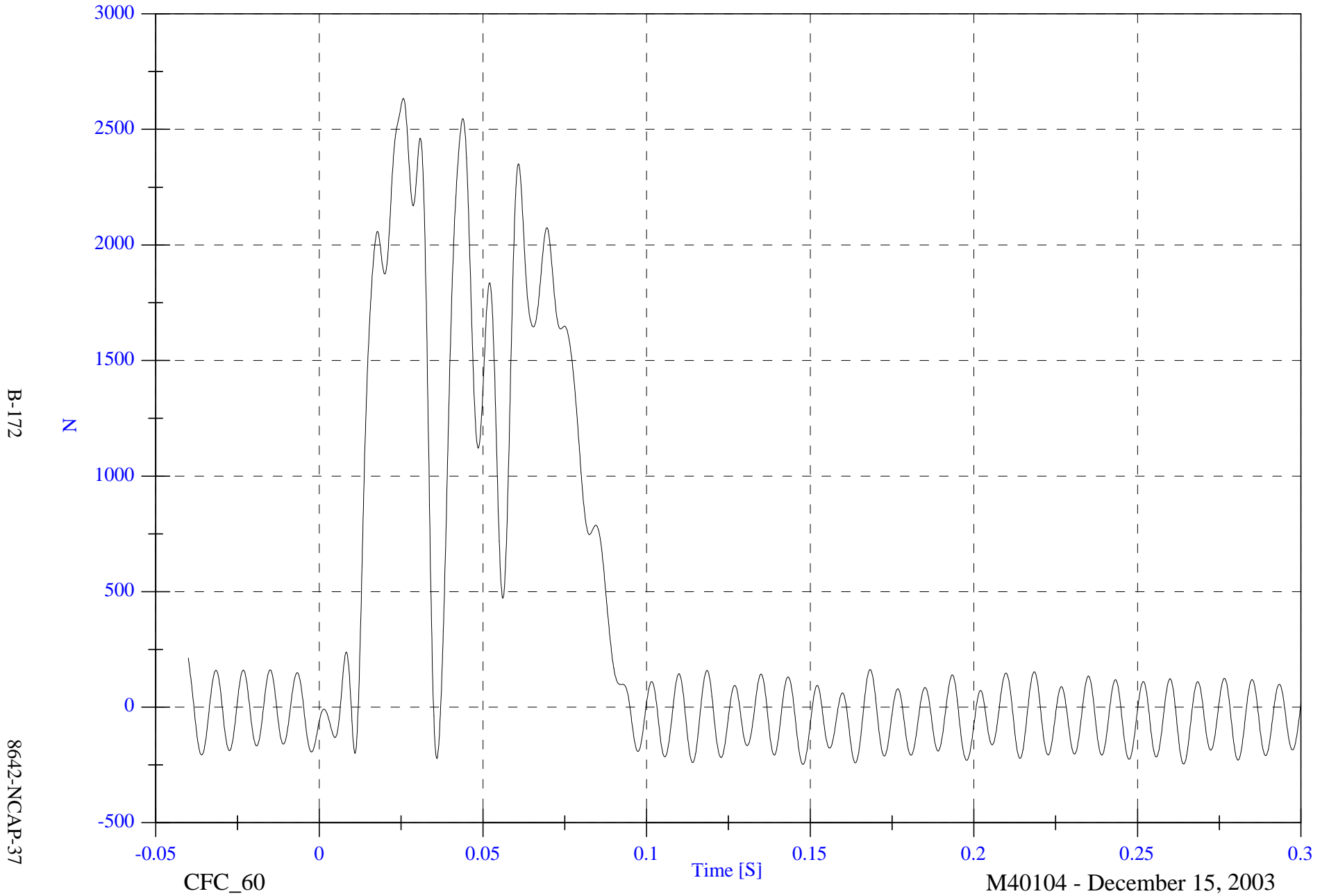
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D3 Fx

Max: 2633.8 [N] at 0.026 [S]

Min: -247.2 [N] at 0.148 [S]

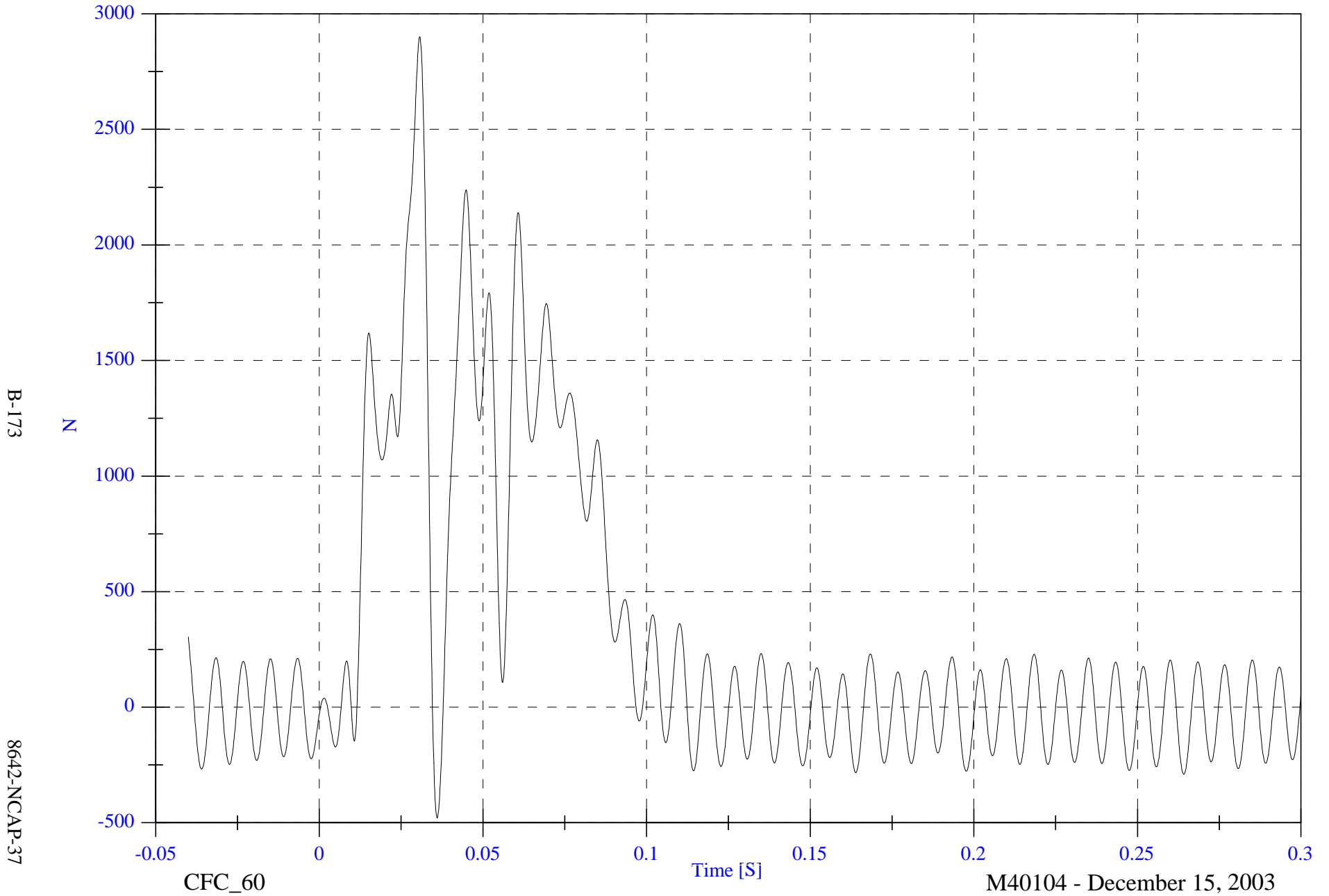


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D4 Fx

Max: 2901.5 [N] at 0.031 [S]

Min: -479.5 [N] at 0.036 [S]



B-173

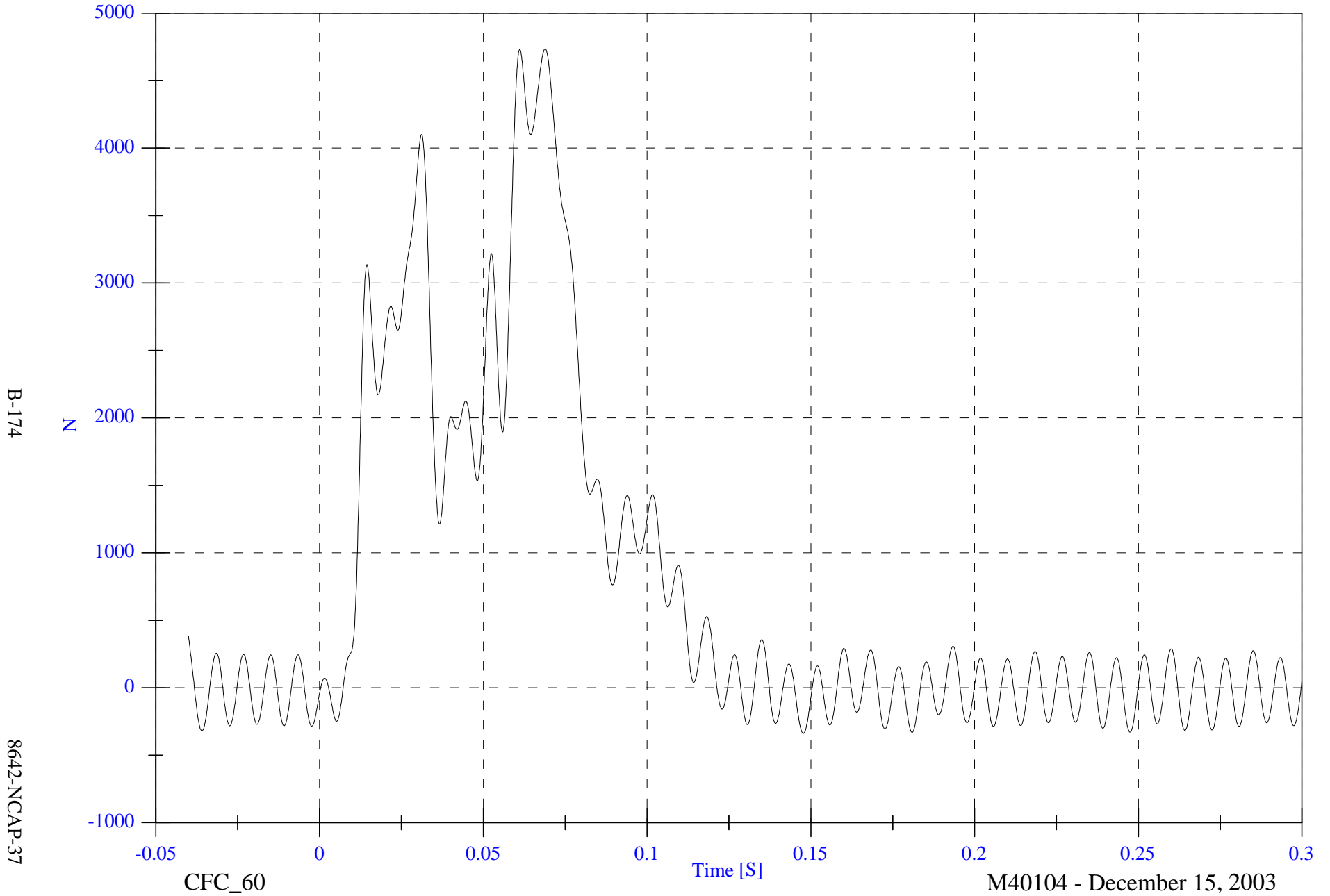
8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D5 Fx

Max: 4736.6 [N] at 0.069 [S]

Min: -337.9 [N] at 0.148 [S]

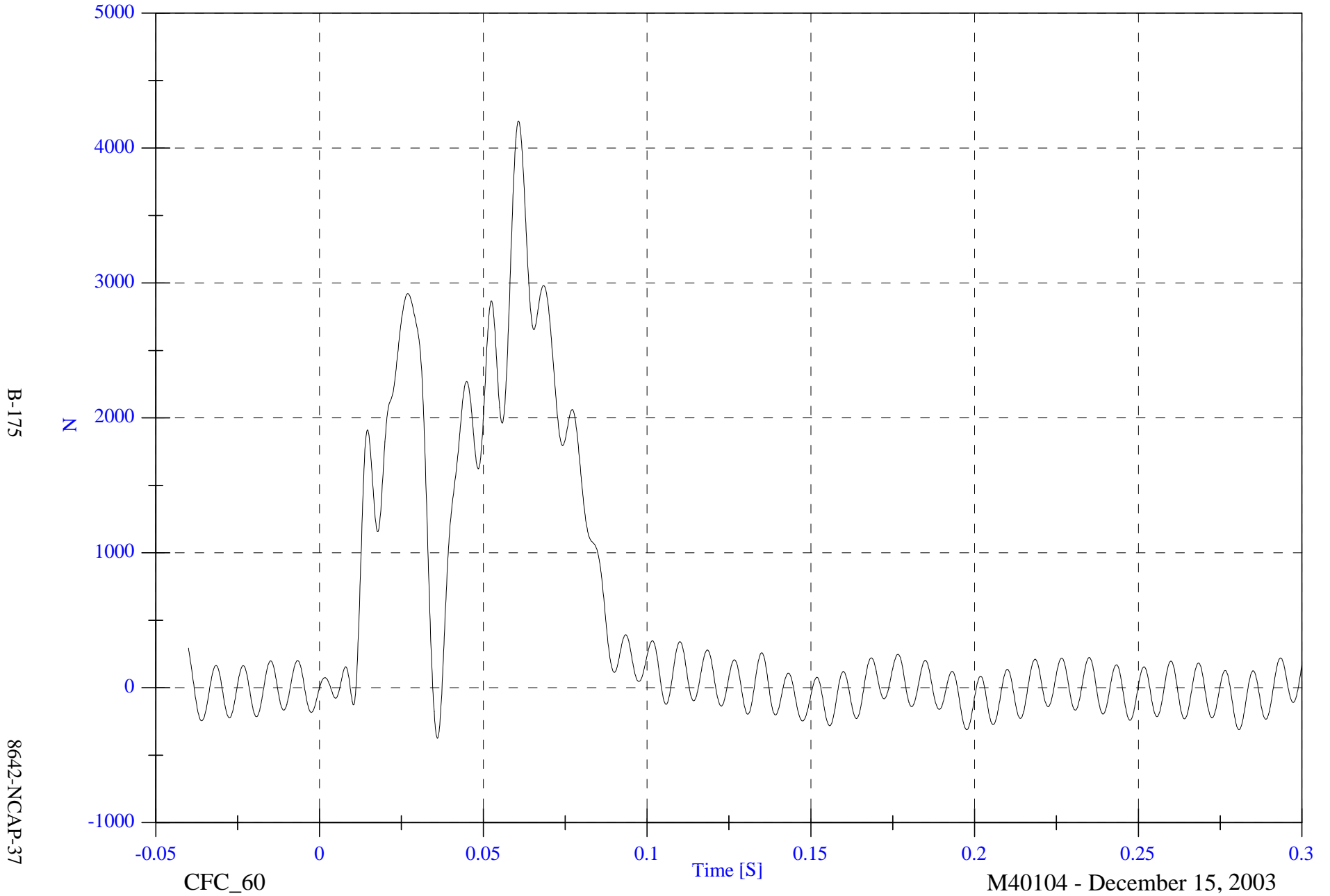


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D6 Fx

Max: 4200.7 [N] at 0.061 [S]

Min: -374.5 [N] at 0.036 [S]

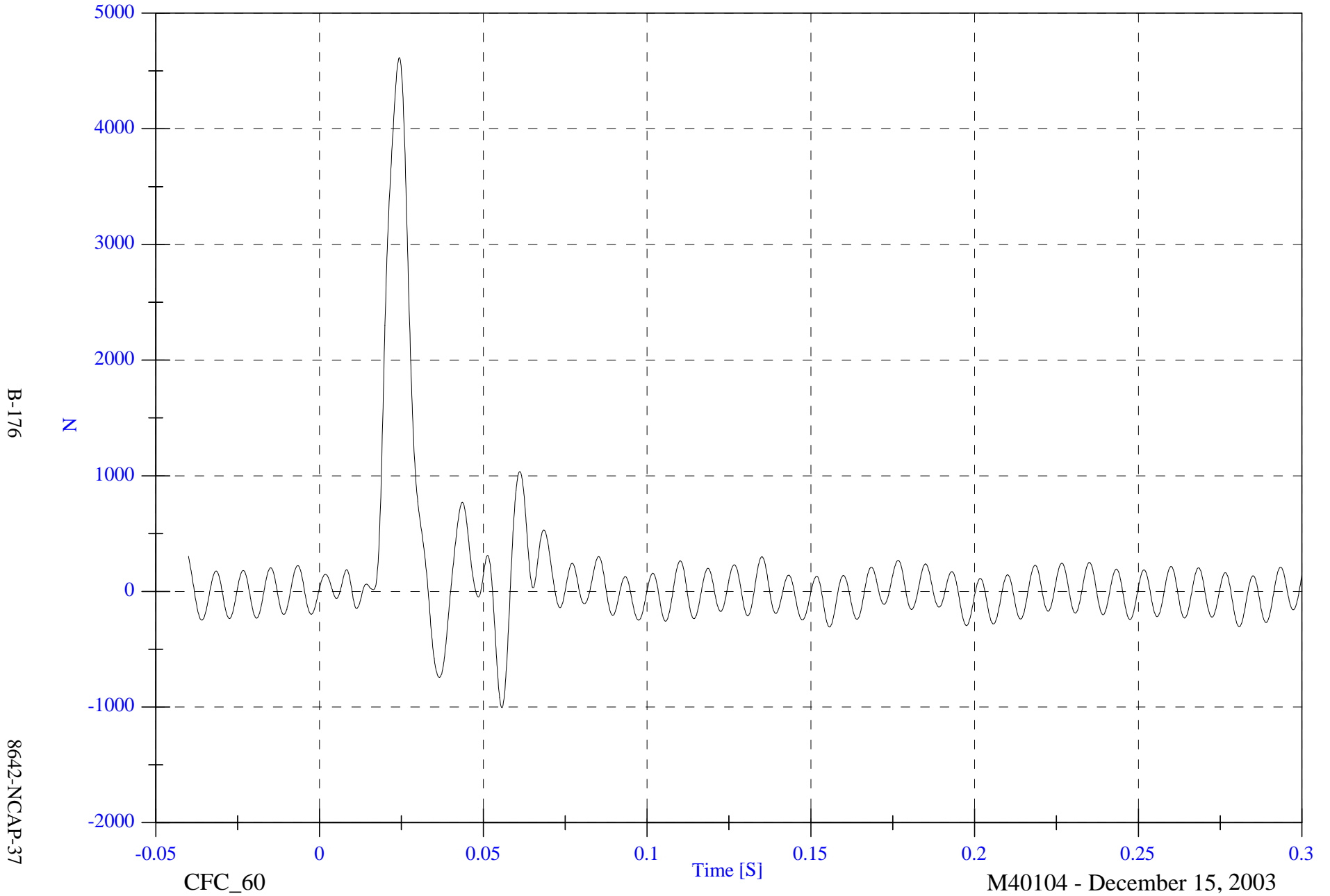


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D7 Fx

Max: 4615.2 [N] at 0.024 [S]

Min: -1006.0 [N] at 0.056 [S]

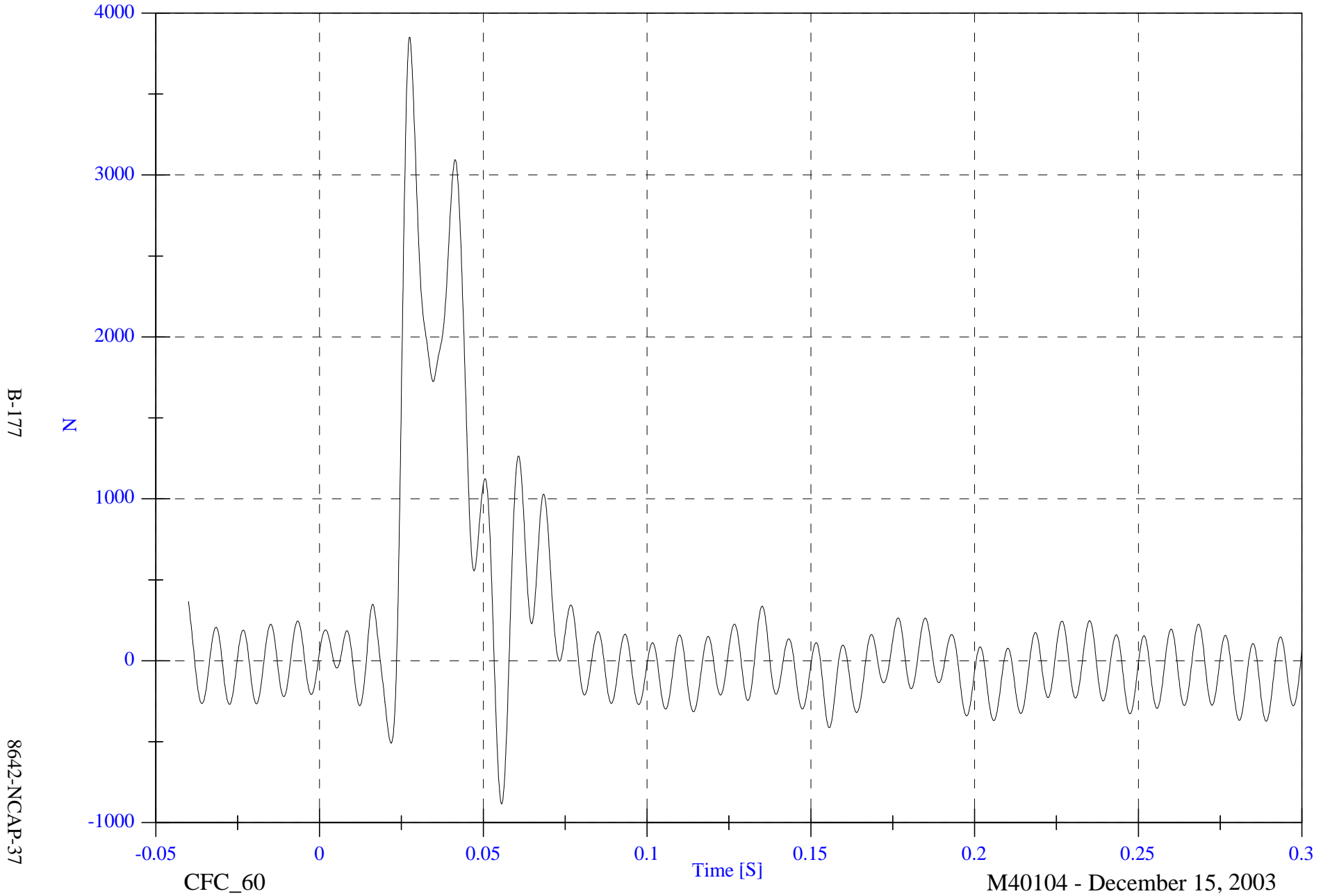


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D8 Fx

Max: 3852.4 [N] at 0.027 [S]

Min: -883.8 [N] at 0.056 [S]

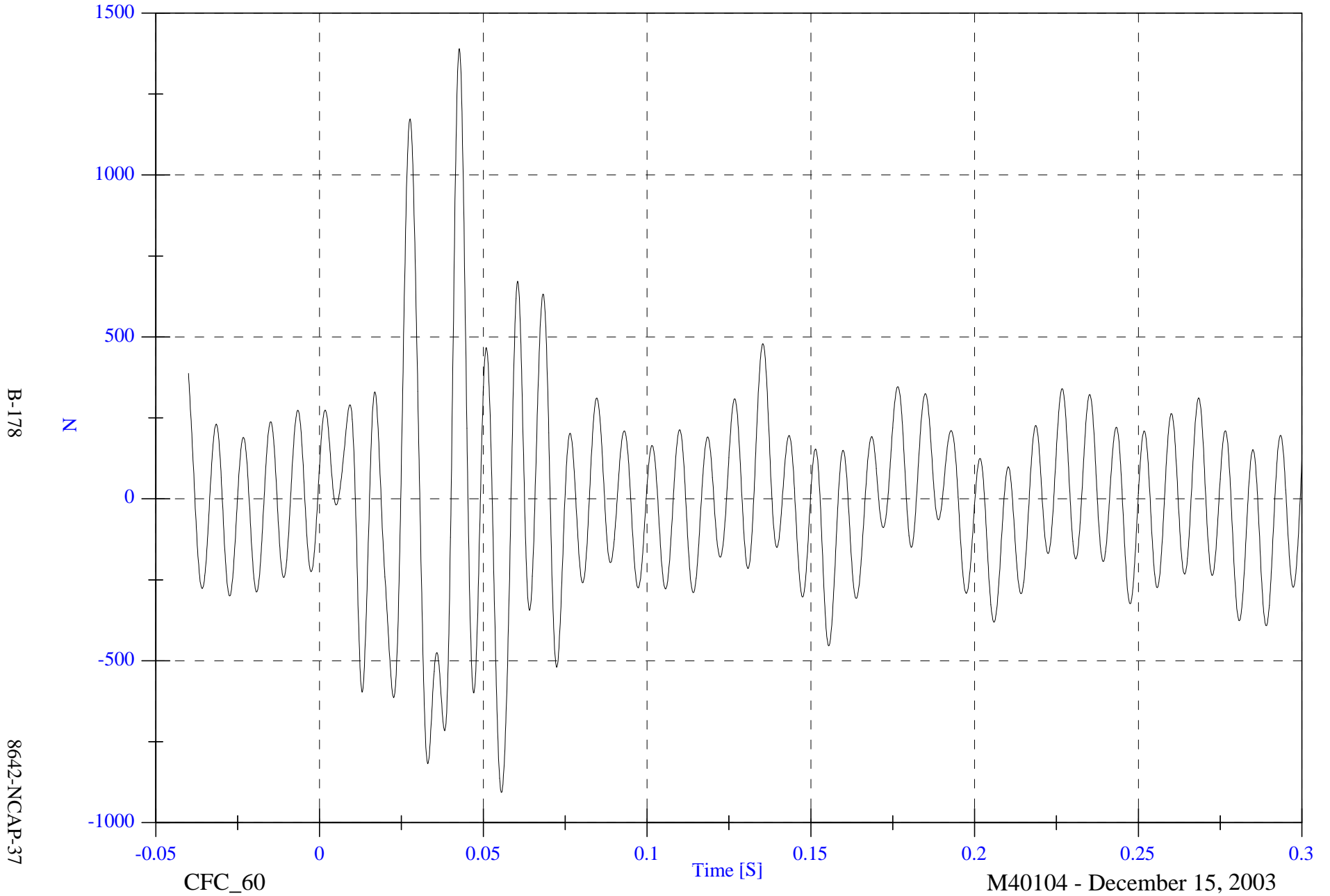


2004 NCAP Test 1 2004 Chevrolet Malibu

Barrier Load Cell D9 Fx

Max: 1390.0 [N] at 0.043 [S]

Min: -906.6 [N] at 0.056 [S]

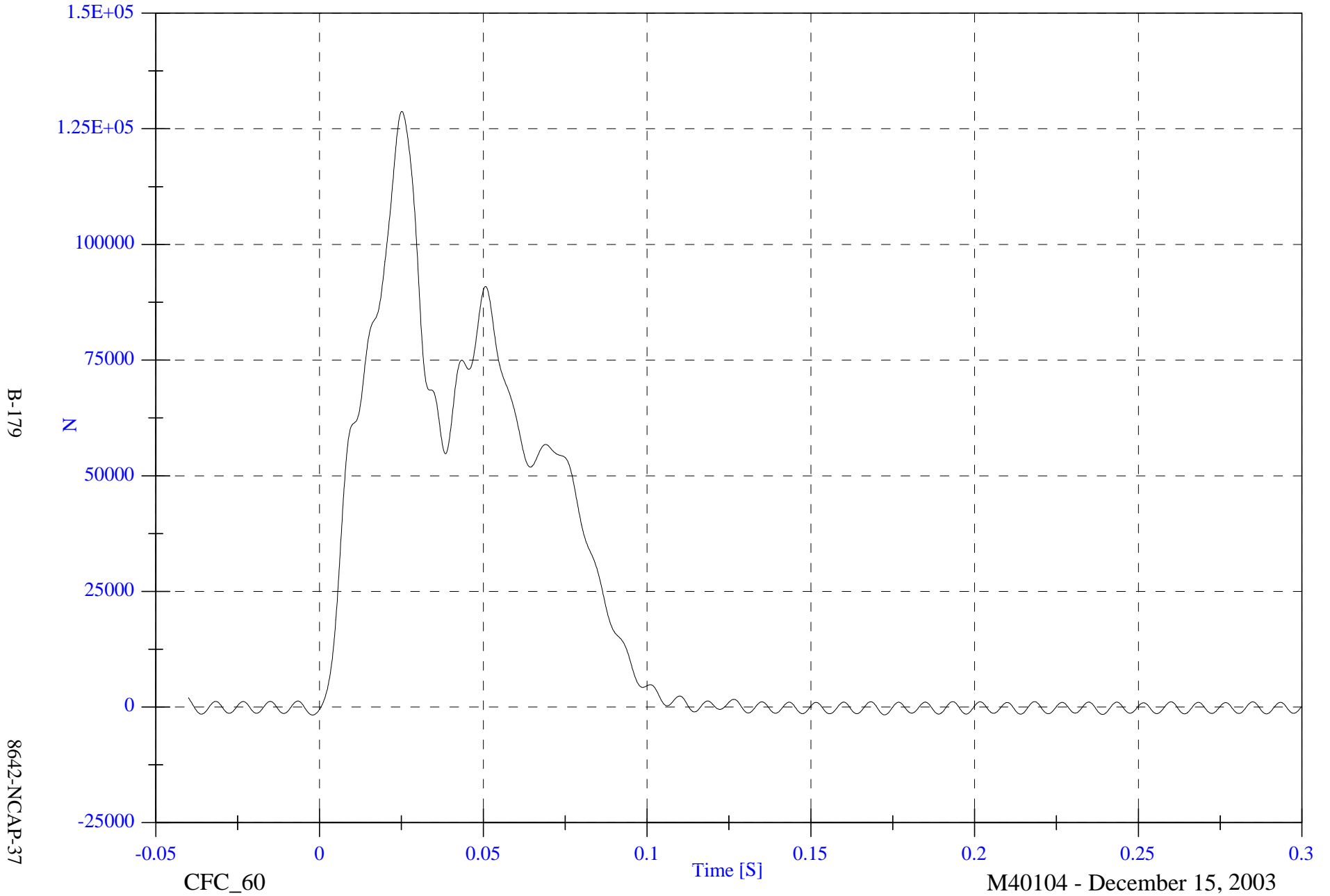


2004 NCAP Test 1 2004 Chevrolet Malibu

Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)

Max: 128738.3 [N] at 0.025 [S]

Min: -1723.8 [N] at -0.002 [S]



B-179

8642-NCAP-37

CFC_60

Time [S]

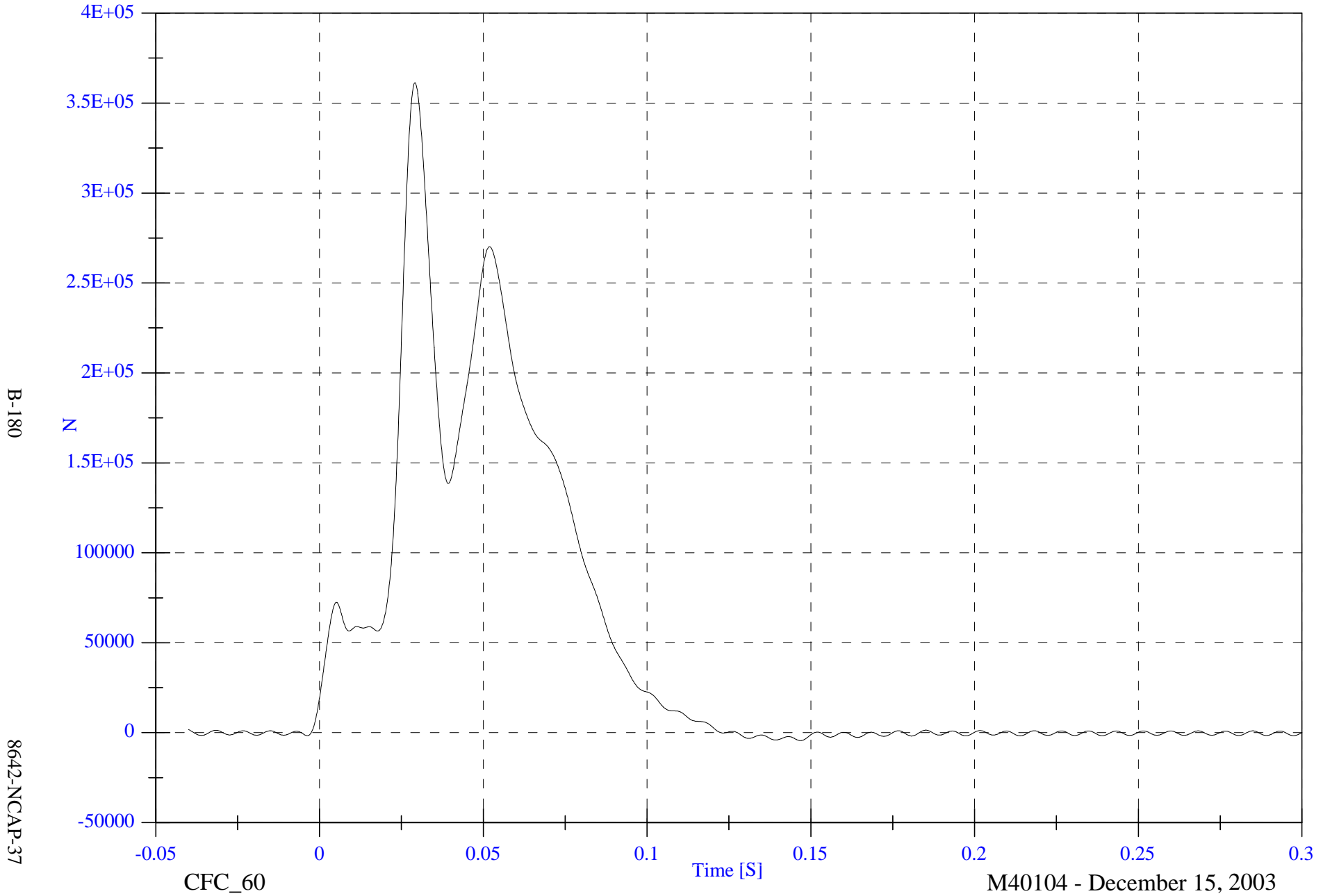
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Group 2 Load Cell Sum (A4,A5,A6,B4,B5,B6)

Max: 361261.0 [N] at 0.029 [S]

Min: -4370.0 [N] at 0.147 [S]

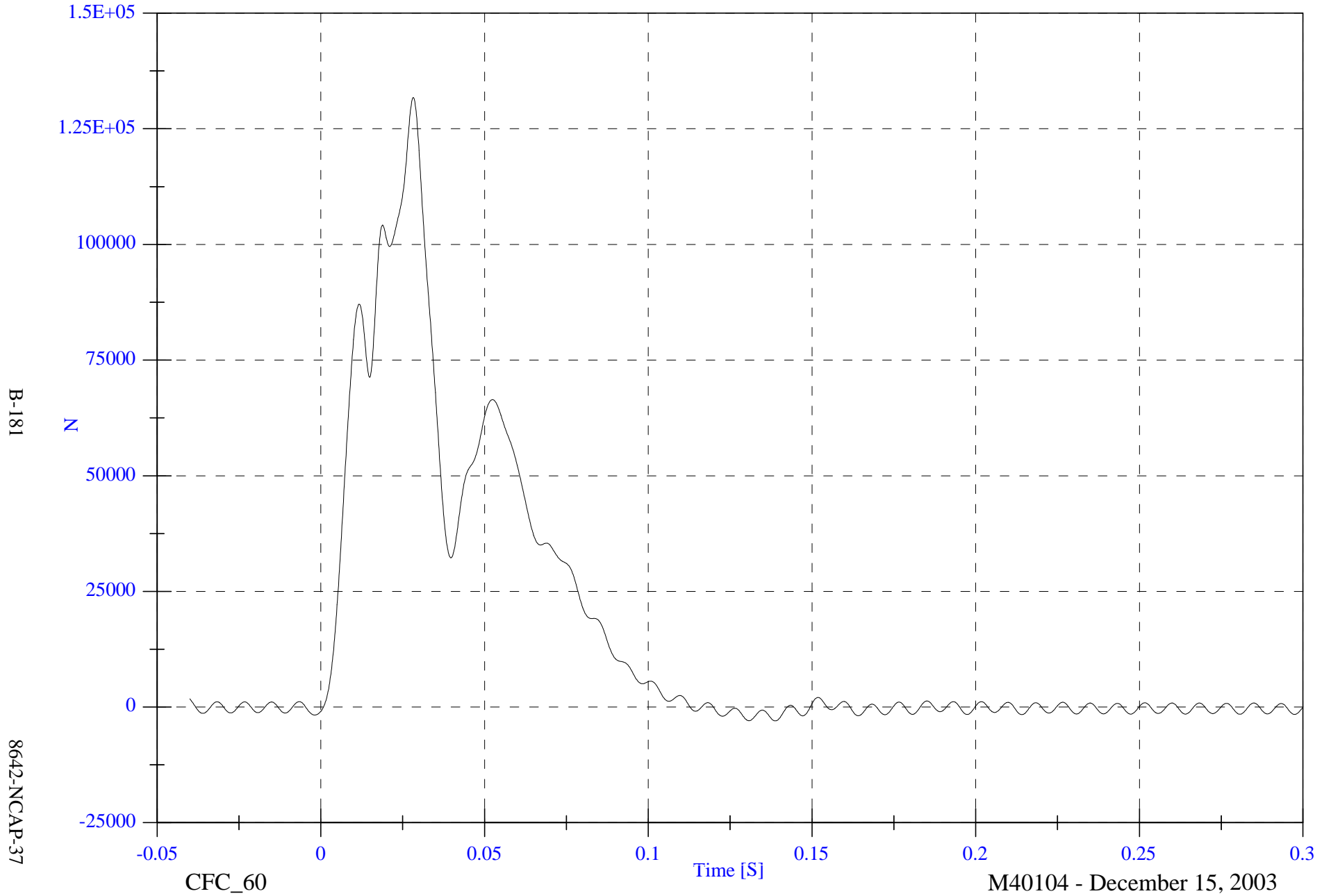


2004 NCAP Test 1 2004 Chevrolet Malibu

Group 3 Load Cell Sum (A7,A8,A9,B7,B8,B9)

Max: 131767.5 [N] at 0.028 [S]

Min: -3004.0 [N] at 0.139 [S]

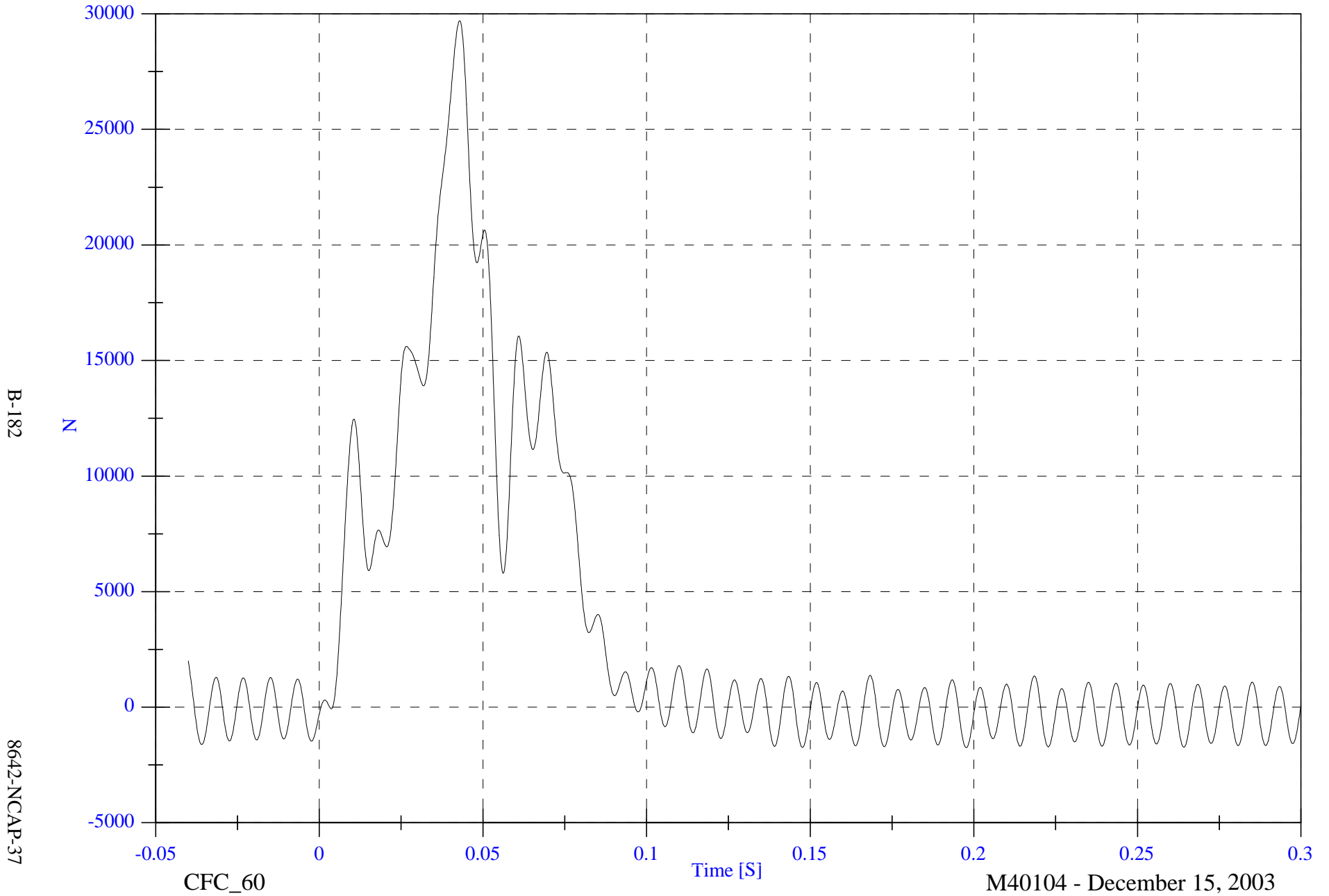


2004 NCAP Test 1 2004 Chevrolet Malibu

Group 4 Load Cell Sum (C1,C2,C3,D1,D2,D3)

Max: 29696.2 [N] at 0.043 [S]

Min: -1754.7 [N] at 0.198 [S]

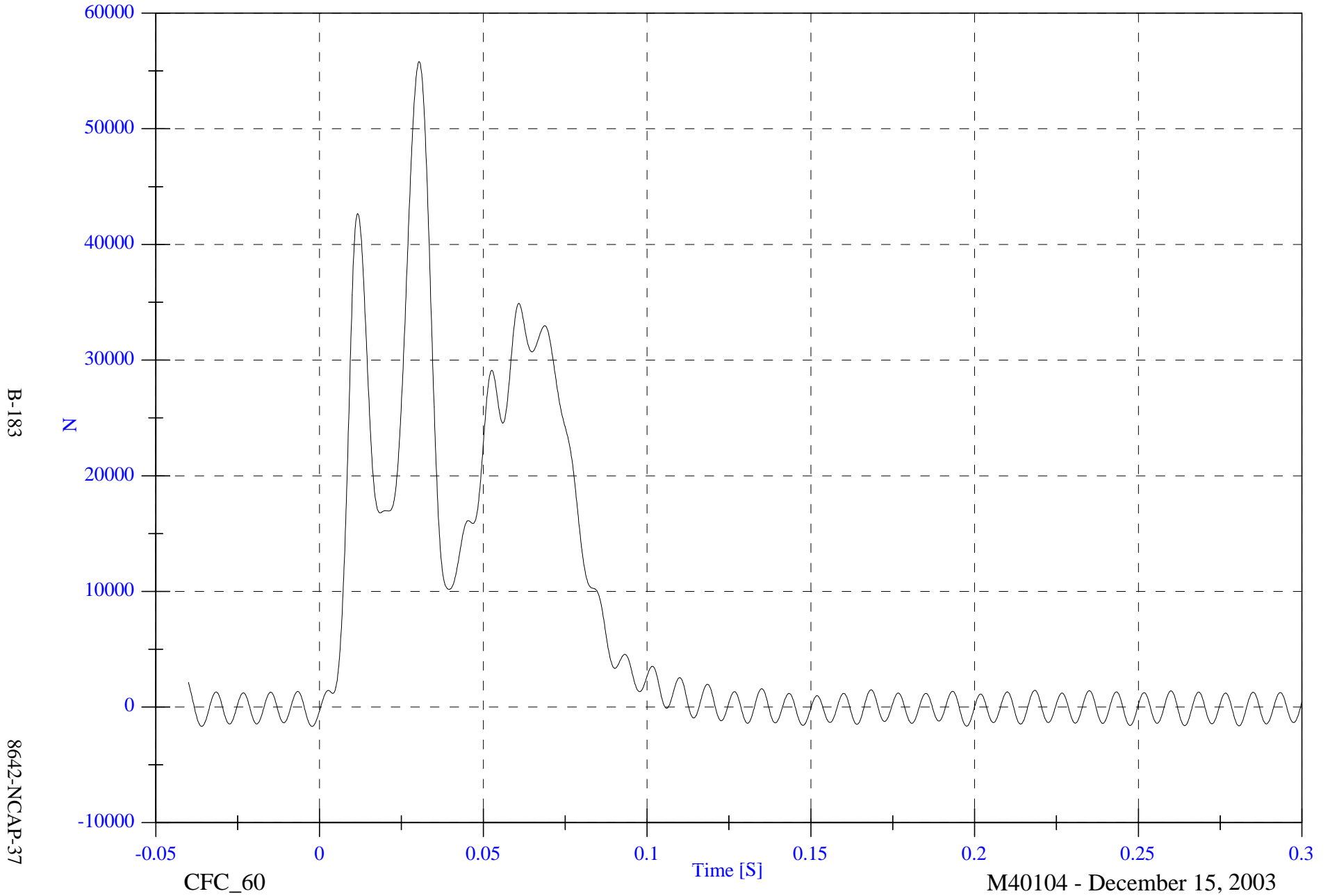


2004 NCAP Test 1 2004 Chevrolet Malibu

Group 5 Load Cell Sum (C4,C5,C6,D4,D5,D6)

Max: 55804.3 [N] at 0.030 [S]

Min: -1676.1 [N] at -0.002 [S]



B-183

8642-NCAP-37

CFC_60

Time [S]

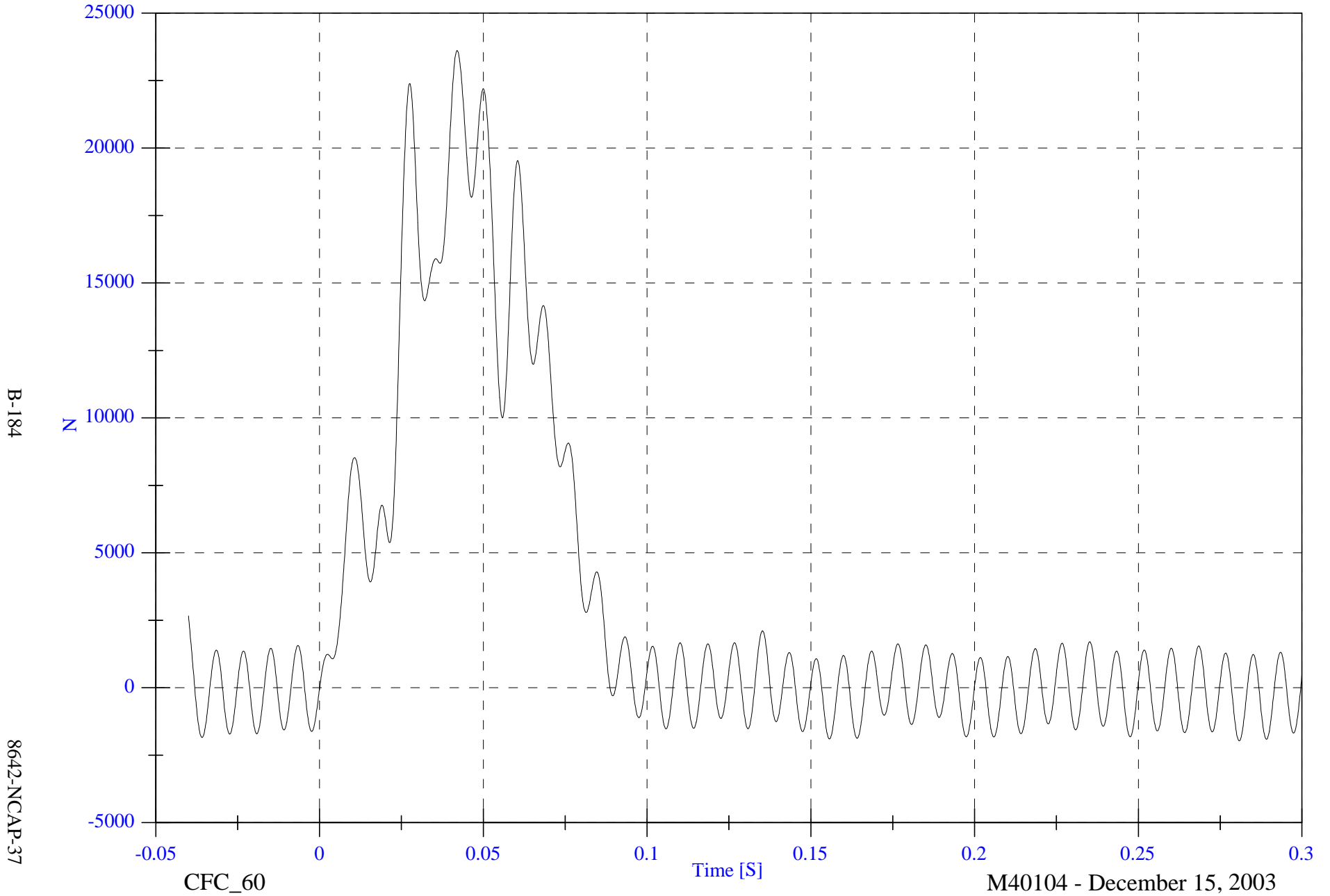
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Group 6 Load Cell Sum (C7,C8,C9,D7,D8,D9)

Max: 23613.3 [N] at 0.042 [S]

Min: -1968.5 [N] at 0.281 [S]

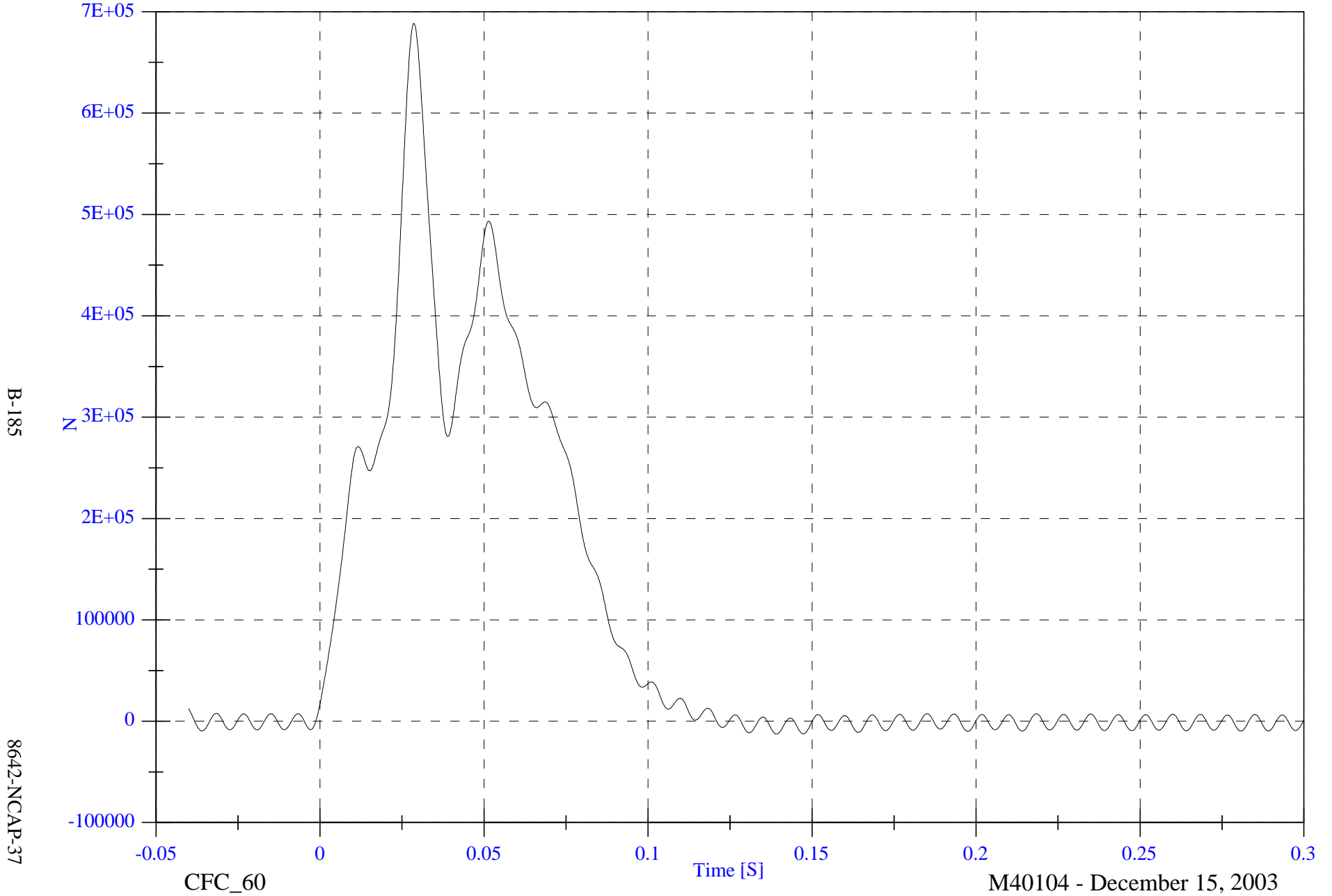


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 688527.9 [N] at 0.029 [S]

Total Load Cell Sum (All 6 Groups)

Min: -12638.5 [N] at 0.139 [S]



B-185

8642-NCAP-37

CFC_60

Time [S]

M40104 - December 15, 2003

APPENDIX C

**PART 572B/E DUMMY CONFIGURATION
AND PERFORMANCE VERIFICATION DATA SHEETS**

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of General Dynamics . A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are :

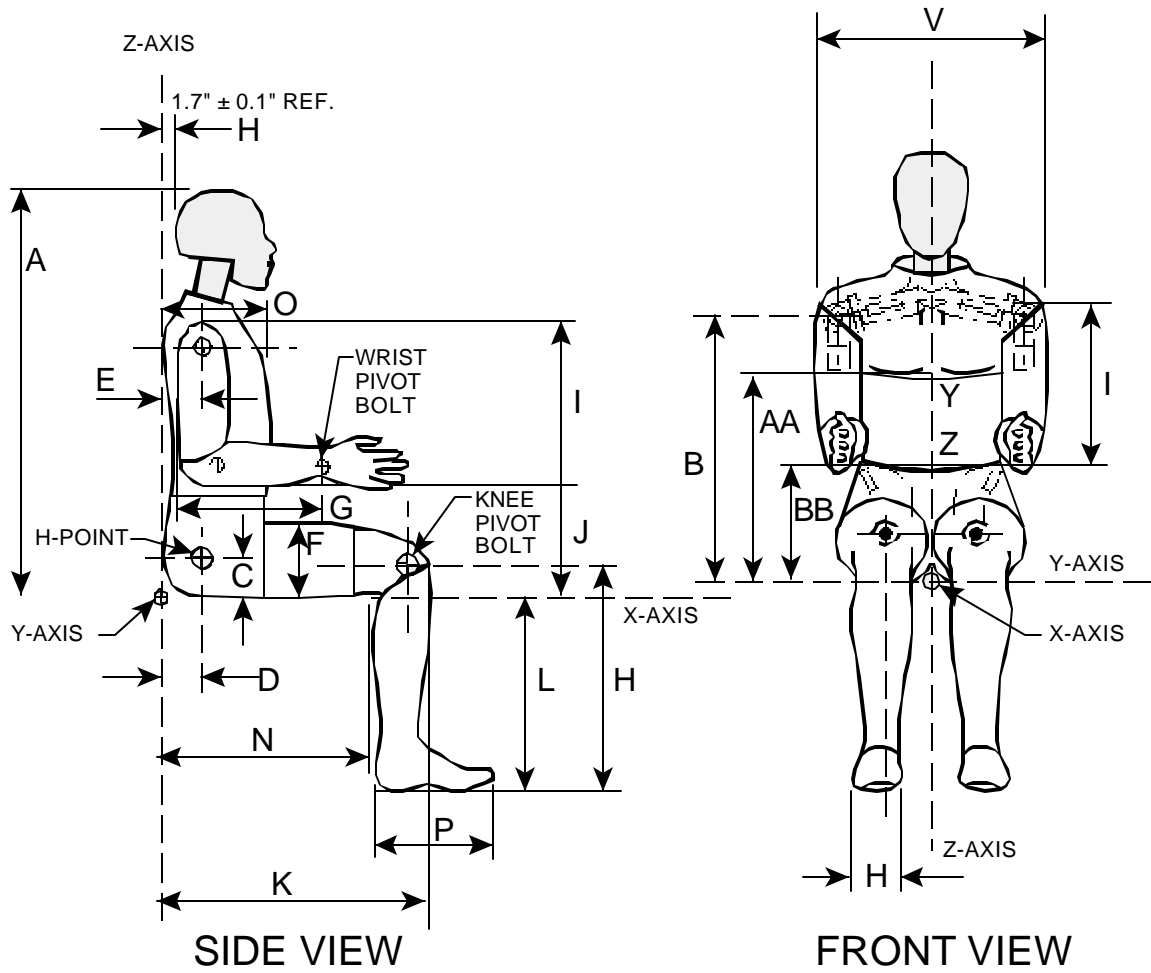
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	December 1, 2003
#2/Right Front Passenger	064	December 1, 2003

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude. (REF: S572.31(A)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 11/24/2003
Workfile 061H 11-24-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	38.0
Peak Resultant Acceleration	225-275 G's	242.02
Peak Lateral Acceleration	15 G's Max	5.62
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	11/25/2003	6 Axis Neck Transducer
Workfile	061NF 11-25-03	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.00
Relative Humidity	10% - 70%	37.00
Impact Velocity	22.60 - 23.40 Ft/s	23.06
Pendulum Deceleration	10 ms	22.50 - 27.50 G's
	20 ms	17.60 - 22.60 G's
	30 ms	12.50 - 18.50 G's
Max Pendulum G's Above 30 ms	29 G's Max	16.12
Deceleration - Time Curve Decay Time to 5 G's	34 - 42 ms	39.90
D Plane Rotation	Max	64 - 78 Deg
	Time	57 - 64 ms
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs
	Time	47 - 58 ms
Rotation Angle - Time Curve Decay Time to Zero	113 - 128 ms	113.10
Positive Moment - Time Curve Decay Time to Zero	97 - 107 ms	98.40

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	11/25/2003	6 Axis Neck Transducer
Workfile	061NE 11-25-03	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	37.0
Impact Velocity		19.50 - 20.30 Ft/s	19.85
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.44
	20 ms	14.00 - 19.00 G's	16.35
	30 ms	11.00 - 16.00 G's	11.64
Max Pendulum G's Above 30 ms		22 G's Max	11.64
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	45.00
D Plane Rotation	Max	81 - 106 Deg	89.88
	Time	72 - 82 ms	76.20
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-58.84
	Time	65 - 79 ms	69.60
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	156.30
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	139.40

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 11/26/2003
Workfile 061T 11-26-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	27.00
Pendulum Velocity	21.6 - 22.4 Ft/s	23.35
Maximum Deflection	2.50 - 2.86 in	2.61
Maximum Resistive Force	1160 - 1325 Lbs	1279.80
Internal Hysteresis	69 - 85 %	76.53

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
 Sequential Test Number 1
 Date 12/01/2003
 Workfile 061LF 12-01-03/061RF 12-01-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	35.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1176.83
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	35.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1104.71

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date 12/01/2003

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.0
Relative Humidity			35.0
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.5
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.9
Thigh Clearance	F	5.5 - 6.1 in	6.1
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	7.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 11/24/2003
Workfile 064H 11-24-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	38.0
Peak Resultant Acceleration	225-275 G's	245.44
Peak Lateral Acceleration	15 G's Max	12.76
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	11/25/2003	6 Axis Neck Transducer
Workfile	064NF1 11-25-03	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	37.00
Impact Velocity		22.60 - 23.40 Ft/s	22.87
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.55
	20 ms	17.60 - 22.60 G's	20.53
	30 ms	12.50 - 18.50 G's	15.03
Max Pendulum G's Above 30 ms		29 G's Max	15.03
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.30
D Plane Rotation	Max	64 - 78 Deg	64.84
	Time	57 - 64 ms	58.00
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	76.84
	Time	47 - 58 ms	51.30
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.40
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.80

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	2	
Date	11/25/2003	6 Axis Neck Transducer
Workfile	064NE2 11-25-03	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	37.00
Impact Velocity		19.50 - 20.30 Ft/s	19.85
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.18
	20 ms	14.00 - 19.00 G's	16.95
	30 ms	11.00 - 16.00 G's	13.61
Max Pendulum G's Above 30 ms		22 G's Max	13.88
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.40
D Plane Rotation	Max	81 - 106 Deg	90.73
	Time	72 - 82 ms	75.10
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-50.39
	Time	65 - 79 ms	70.20
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	151.50
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	133.80

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 11/26/2003
Workfile 064T1 11-26-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	27.00
Pendulum Velocity	21.6 - 22.4 Ft/s	22.33
Maximum Deflection	2.50 - 2.86 in	2.55
Maximum Resistive Force	1160 - 1325 Lbs	1311.25
Internal Hysteresis	69 - 85 %	74.96

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date 12-01-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.0
Relative Humidity			35.0
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.6
Chest Depth	O	8.4 - 9.0 in	8.5
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P21399	06-Nov-03	06-May-04
	X Arm Z	ENDEVCO	AC-P23282	11-Nov-03	11-May-04
	Y Arm X	ENDEVCO	AC-P23155	11-Nov-03	11-May-04
	Y Arm Z	ENDEVCO	AC-P23358	06-Nov-03	06-May-04
	Z Arm X	ENDEVCO	AC-P18731	11-Nov-03	11-May-04
	Z Arm Y	ENDEVCO	AC-P23885	11-Nov-03	11-May-04
Head	X	ENDEVCO	AC-P18516	11-Nov-03	11-May-04
	Y	ENDEVCO	AC-P19222	11-Nov-03	11-May-04
	Z	ENDEVCO	AC-P18785	11-Nov-03	11-May-04
Head	X (R)	ENDEVCO	AC-P18663	11-Nov-03	11-May-04
	Y (R)	ENDEVCO	AC-P18639	11-Nov-03	11-May-04
	Z (R)	ENDEVCO	AC-P18537	11-Nov-03	11-May-04
Neck Load Cell	X	DENTON	LC-076Fx	24-Sep-03	24-Mar-04
	Y	DENTON	LC-076Fy	24-Sep-03	24-Mar-04
	Z	DENTON	LC-076Fz	24-Sep-03	24-Mar-04
Neck Moment	X	DENTON	LC-076Mx	24-Sep-03	24-Mar-04
	Y	DENTON	LC-076My	24-Sep-03	24-Mar-04
	Z	DENTON	LC-076Mz	24-Sep-03	24-Mar-04
Chest	X	ENDEVCO	AC-P21373	30-Oct-03	30-Apr-04
	Y	ENDEVCO	AC-P22639	30-Oct-03	30-Apr-04
	Z	ENDEVCO	AC-P21297	30-Oct-03	30-Apr-04
Chest	X (R)	ENDEVCO	AC-P21171	30-Oct-03	30-Apr-04
	Y (R)	ENDEVCO	AC-P23136	30-Oct-03	30-Apr-04
	Z (R)	ENDEVCO	AC-P23128	30-Oct-03	30-Apr-04
Chest Deflection	X	SERVO	DS-061	11-Nov-03	11-May-04
Pelvic	X	ENDEVCO	AC-P18792	11-Nov-03	11-May-04
	Y	ENDEVCO	AC-P17535	11-Nov-03	11-May-04
	Z	ENDEVCO	AC-P23134	11-Nov-03	11-May-04

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)	Manufacturer	Serial #	Calibration		
			Last	Next	
Left Femur Load Cell Fz	DENTON	LC-231	03-Dec-03	03-Jun-04	
Right Femur Load Cell Fz	DENTON	LC-232	03-Dec-03	03-Jun-04	
Left Upper Tibia	Mx	DENTON	LC-038Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-038My	26-Sep-03	26-Mar-04
Left Lower Tibia	Fz	DENTON	LC-124Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-124Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-124My	26-Sep-03	26-Mar-04
Right Upper Tibia	Mx	DENTON	LC-023Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-023My	26-Sep-03	26-Mar-04
Right Lower Tibia	Fz	DENTON	LC-111Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-111Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-111My	26-Sep-03	26-Mar-04
Left Foot Rear	X	ENTRAN	AC-00L13-F04	14-Nov-03	14-May-04
	Z	ENTRAN	AC-01G18-F15	14-Nov-03	14-May-04
Left Foot Front	Z	ENTRAN	AC-01G18-F14	14-Nov-03	14-May-04
Right Foot Rear	X	ENTRAN	AC-01G18-F05	14-Nov-03	14-May-04
	Z	ENTRAN	AC-01G18-F03	14-Nov-03	14-May-04
Right Foot Front	Z	ENTRAN	AC-01J02-F09	14-Nov-03	14-May-04
Lap Belt Load Cell	First Technology	LC-173	10-Oct-03	11-Apr-04	

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)	Manufacturer	Serial #	Calibration		
			Last	Next	
Head 9 Array	X Arm Y	ENDEVCO	AC-P18532	20-Nov-03	20-May-04
	X Arm Z	ENDEVCO	AC-P17237	20-Nov-03	20-May-04
	Y Arm X	ENDEVCO	AC-P16662	20-Nov-03	20-May-04
	Y Arm Z	ENDEVCO	AC-P17299	20-Nov-03	20-May-04
	Z Arm X	ENDEVCO	AC-P21441	20-Nov-03	20-May-04
	Z Arm Y	ENDEVCO	AC-P21516	20-Nov-03	20-May-04
Head	X	ENDEVCO	AC-J32184	03-Nov-03	03-May-04
	Y	ENDEVCO	AC-J32185	30-Oct-03	30-Apr-04
	Z	ENDEVCO	AC-J31011	03-Nov-03	03-May-04
Head	X (R)	ENDEVCO	AC-J31020	03-Nov-03	03-May-04
	Y (R)	ENDEVCO	AC-J31101	03-Nov-03	03-May-04
	Z (R)	ENDEVCO	AC-J31059	03-Nov-03	03-May-04
Neck Load Cell	X	DENTON	LC-1634Fx	18-Aug-03	18-Feb-04
	Y	DENTON	LC-1634Fy	18-Aug-03	18-Feb-04
	Z	DENTON	LC-1634Fz	18-Aug-03	18-Feb-04
Neck Moment	X	DENTON	LC-1634Mx	18-Aug-03	18-Feb-04
	Y	DENTON	LC-1634My	18-Aug-03	18-Feb-04
	Z	DENTON	LC-1634Mz	18-Aug-03	18-Feb-04
Chest	X	ENDEVCO	AC-J34019	03-Nov-03	03-May-04
	Y	ENDEVCO	AC-J33018	03-Nov-03	03-May-04
	Z	ENDEVCO	AC-J32783	03-Nov-03	03-May-04
Chest	X (R)	ENDEVCO	AC-J31066	03-Nov-03	03-May-04
	Y (R)	ENDEVCO	AC-P16979	03-Nov-03	03-May-04
	Z (R)	ENDEVCO	AC-J31022	03-Nov-03	03-May-04
Chest Deflection	X	SERVO	DS-064	20-Nov-03	20-May-04
Pelvic	X	ENDEVCO	AC-P23174	30-Oct-03	30-Apr-04
	Y	ENDEVCO	AC-P23164	30-Oct-03	30-Apr-04
	Z	ENDEVCO	AC-P23137	30-Oct-03	30-Apr-04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)	Manufacturer	Serial #	Calibration		
			Last	Next	
Left Femur Load Cell	Fz	GSE	LC-723	03-Dec-03	03-Jun-04
Right Femur Load Cell	Fz	GSE	LC-955	03-Dec-03	03-Jun-04
Left Upper Tibia	Mx	DENTON	LC-045Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-045My	26-Sep-03	26-Mar-04
Left Lower Tibia	Fz	DENTON	LC-125Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-125Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-125My	26-Sep-03	26-Mar-04
Right Upper Tibia	Mx	DENTON	LC-016Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-016My	26-Sep-03	26-Mar-04
Right Lower Tibia	Fz	DENTON	LC-123Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-123Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-123My	26-Sep-03	26-Mar-04
Left Foot Rear	X	ENDEVCO	AC-J18059	04-Dec-03	04-Jun-04
	Z	ENDEVCO	AC-J36176	04-Dec-03	04-Jun-04
Left Foot Front	Z	ENDEVCO	AC-J18662	04-Dec-03	04-Jun-04
Right Foot Rear	X	ENDEVCO	AC-AJ8C0	04-Dec-03	04-Jun-04
	Z	ENDEVCO	AC-J19868	04-Dec-03	04-Jun-04
Right Foot Front	Z	ENDEVCO	AC-J34378	04-Dec-03	04-Jun-04
Lap Belt Load Cell		First Technology	LC-175	10-Oct-03	11-Apr-04

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ICS	AC-8062-003	11-Dec-03	11-Jun-04
Right Rear Seat Crossmember X	ICS	AC-8086-047	11-Dec-03	11-Jun-04
Top of Engine	GS SENSORS	AC-9440-029	03-Dec-03	03-Jun-04
Bottom of Engine	ICS	AC-6917-012	11-Dec-03	11-Jun-04
Right Disc Brake Caliper	ICS	AC-8084-014	11-Dec-03	11-Jun-04
Instrument Panel	GS SENSORS	AC-9444-038	03-Dec-03	03-Jun-04
Left Disc Brake Caliper	ICS	AC-8084-010	11-Dec-03	11-Jun-04
Left Seat Rear Crossmember Z	ICS	AC-8083-028	11-Dec-03	11-Jun-04
Right Seat Rear Crossmember Z	ICS	AC-8084-023	11-Dec-03	11-Jun-04

REPORT NUMBER: CAL-04-1

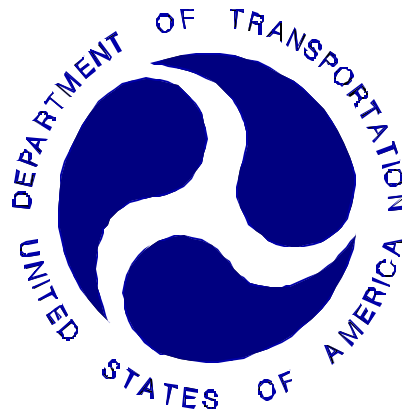
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

EVENFLO VANGUARD 5 LATCH AND TOP TETHER
BRITAX ROUNDABOUT LATCH AND TOP TETHER

NHTSA NUMBER: M40104

GENERAL DYNAMICS REPORT NUMBER: 8642-NCAP-37

GENERALDYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



December 15, 2003

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
Mail Code: NVS-111
400 Seventh Street, SW, Room No. 5313
Washington, DC 20590

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-01-D-32005. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

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Accepted By:

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TECHNICAL REPORT STANDARD TITLE PAGE

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				6. Performing Organization Code CAL	
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15. Supplementary Notes					
16. Abstract This CRS test was performed in conjunction with a New Car Assessment Program (NCAP) load cell barrier test. An Evenflo Vanguard 5 forward facing convertible was secured in Position 3 (P3) with the LATCH system and top tether. A Britax Roundabout forward facing convertible was secured in Position 4 (P4) with the LATCH system and top tether. This test was conducted at the General Dynamics Crash Test Facility in Buffalo, New York, on December 15, 2003.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (044)		712.2		1027.3	
P4 (Left Rear) (142)		514.7		806.1	
17. Key Words New Car Assessment Program (NCAP)				18. Distribution Statement	
				Copies of this report are available from: National Highway Traffic Safety Administration Technical Reference Division Room 5111 (NAD-52) 400 Seventh St., S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946 ATTN: Robert Hornicle	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M40104

The purpose of this test was to obtain CRS performance data in a frontal impact NCAP condition. The 57.13 kph NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

A forward facing convertible 5-point belt CRS and a 3 year old child dummy (serial no. 044) was secured in the right rear occupant position (Position 3 or P3). A forward facing convertible 5-point belt CRS and a 3 year old child dummy (serial no. 142) was secured in the left rear occupant position (Position 4 or P4). Both 3 Year Old Hybrid III (P572 P) child dummies were instrumented with head, chest, and pelvic triaxial accelerometers, rear head Z accelerometers, a chest displacement sensor, and upper and lower six axial neck load cells. The dummies were calibrated previous to this test and the certification information is found in section 5.

The right rear child dummy's HIC (15 ms) was 712.2, the HIC over 36 ms was 1027.3, the maximum chest deceleration over 3 ms was 53.2 g's. The left rear child dummy's HIC (15 ms) was 514.7, the HIC over 36 ms 806.1, the maximum chest deceleration over 3 ms was 51.7 g's.

SECTION 2
DATA SHEET NO. 1
CRASH TEST SUMMARY

TEST DUMMY INFORMATION:

DESCRIPTION	Position #3 CRS	Position #4 CRS
ATD Type/Serial No.	Hybrid III 3C/044	Hybrid III 3C /142
Restraint System:	Evenflo Vanguard 5 LATCH and top Tether	Britax Roundabout LATCH and top Tether

Number of Data Channels _____ 52 _____
 Number of Cameras: _____ 1 _____ Real Time
 _____ 2 _____ High Speed

POST TEST DOOR OPENING

DESCRIPTION	FRONT	REAR
Left Side Doors	Closed, Latched and Operable without tools	Closed, Latched and Operable without tools
Right Side Doors	Closed, Latched and Operable without tools	Closed, Latched and Operable without tools
Hatch/Other Door	N/A	N/A

POST TEST SEAT DATA

LOCATION	SEAT MOVEMENT (mm)	SEAT BACK FAILURE
P1 (Left Front)	0	None
P2 (Right Front)	0	None
P3 (Right Rear)	0	None
P4 (Left Rear)	0	None

VISIBLE DUMMY CONTACT POINTS

	Position #3 CRS	Position #4 CRS
Head Contact:	The face and chin to the chest and the back of the head to the child restraint	The face and chin to the chest and the back of the head to the child restraint
Upper Torso Contact:	None	None
Lower Torso Contact:	None	None
Left Knee Contact:	None	None
Right Knee Contact:	None	None

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1414.5 kg (A)

AS TESTED WEIGHT OF VEHICLE

(2 P572E + 1 P572P w/ CRS + 1 P572P w/ CRS +CARGO + EQUIPMENT & INSTRUMENTATION):

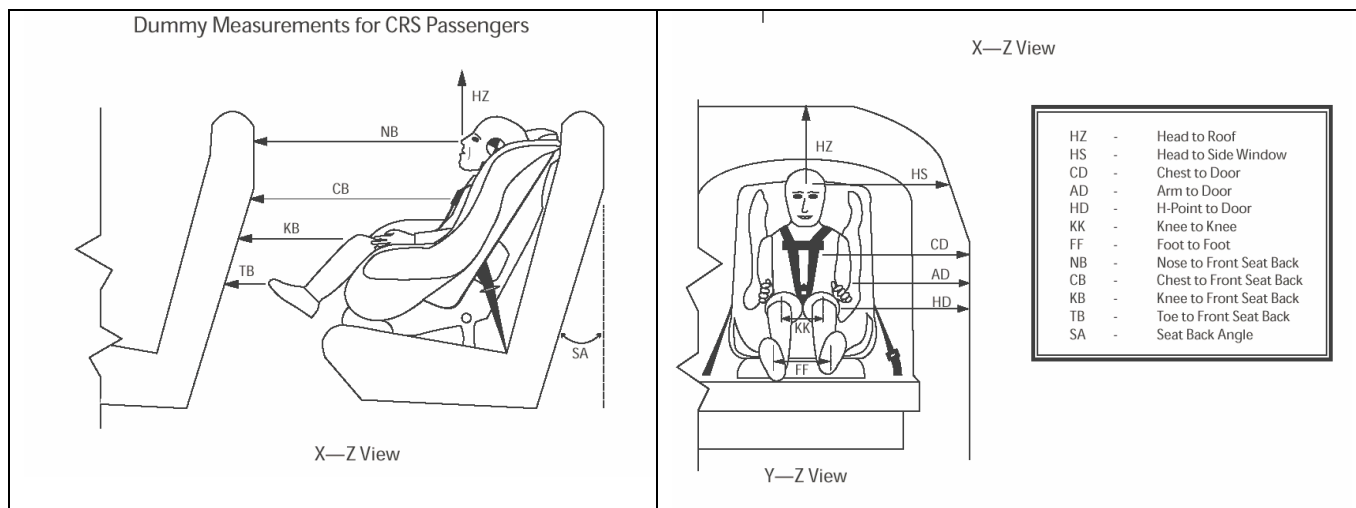
Left Front	=	<u>475.5</u>	kg	Left Rear	=	<u>351.0</u>	kg
Right Front	=	<u>459.5</u>	kg	Right Rear	=	<u>349.0</u>	kg
TOTAL FRONT	=	<u>475.5</u>	kg	TOTAL REAR	=	<u>351.0</u>	kg
TOTAL TEST WEIGHT =		<u>808.5</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104



Measurement	P3 CRS (044)	P4 CRS (142)
SA	22	24
HS	300	332
CD	368	355
AD	232	205
HD	298	267
HZ	348	290
NB	580	563
CB	582	538
KK	147	185
FF	150	215
KB – LEFT	417	390
KB – RIGHT	420	380
TB – LEFT	128	160
TB – RIGHT	126	150

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

P4 – Left Rear Passenger (CRS #2)

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	116.0	193.3	-31.4	103.3	46.8	210.5	-46.4	101.5
Head Y	g	24.4	190.7	-12.5	103.4	36.9	101.2	-7.8	149.5
Head Z	g	74.8	82.3	-9.9	45.9	68.5	79.6	-9.9	46.4
Head Resultant	g	120.0	193.3	0.0	-46.2	70.6	79.6	0.0	-32.1
Head Rear Z	g	89.0	85.1	-44.8	189.7	**	**	**	**
Upper Neck Fx	N	159.5	190.1	-730.0	102.1	34.2	254.5	-579.5	99.1
Upper Neck Fy	N	186.0	82.4	-25.7	45.9	61.9	150.4	-132.6	81.8
Upper Neck Fz	N	2101.7	86.6	-252.9	47.1	1776.0	83.8	-272.2	47.3
Upper Neck F Resultant	N	2178.0	86.6	0.3	-24.1	1835.3	83.8	0.1	-31.2
Upper Neck Mx	N-m	3.7	141.5	-15.9	89.5	7.1	77.8	-9.1	91.9
Upper Neck My	N-m	12.1	68.1	-8.8	190.2	7.2	152.8	-20.2	225.6
Upper Neck Mz	N-m	3.3	101.7	-2.1	185.0	4.8	109.4	-3.0	212.0
Upper Neck M Resultant	N-m	17.7	90.3	0.0	-25.9	20.4	225.6	0.0	-39.6
Lower Neck Fx	N	346.6	190.5	-1133.4	74.5	239.2	212.6	-1258.8	86.9
Lower Neck Fy	N	184.6	191.1	-262.8	98.2	63.5	151.8	-156.1	80.5
Lower Neck Fz	N	1467.1	85.1	-348.7	49.6	1526.2	79.3	-354.8	47.9
Lower Neck F Resultant	N	1788.2	85.2	0.5	-48.6	1890.6	79.8	0.1	17.3
Lower Neck Mx	N-m	7.4	189.8	-40.1	91.4	6.9	134.9	-18.8	88.1
Lower Neck My	N-m	101.3	87.4	-19.3	190.5	99.4	87.1	-16.2	212.3
Lower Neck Mz	N-m	2.0	141.2	-17.2	86.4	5.1	155.7	-4.3	88.9
Lower Neck M Resultant	N-m	109.4	88.6	0.1	-49.2	101.1	87.1	0.1	-42.0
Chest X	g	21.6	199.0	-39.9	72.6	5.8	225.5	-39.5	58.8
Chest Y	g	8.6	199.0	-8.7	76.8	7.9	102.7	-11.1	74.4
Chest Z	g	22.4	93.4	-38.6	65.2	19.4	90.0	-38.3	59.6
Chest Resultant	g	55.2	64.9	0.0	-45.8	54.7	59.1	0.1	-33.0
Chest Displacement	g	0.1	21.3	-23.9	103.2	0.0	-48.8	-20.4	100.9

** - Meaningless Data

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	14.3	129.9	-57.0	65.4	11.4	120.6	-45.6	66.5
Pelvic Y	g	5.2	211.2	-11.8	63.8	4.6	118.8	-10.4	80.2
Pelvic Z	g	20.2	95.6	-43.4	62.4	11.6	217.5	-44.7	63.6
Pelvic Resultant	g	70.4	63.0	0.0	-46.5	63.0	65.2	0.1	-29.0

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104

	HEAD INJURY CRITERIA (HIC)							
	HIC15				HIC36			
	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #3 - Right	712.2	188.1	196.4	94.1 g	1027.3	68.7	104.7	60.6 g
Position #4 - Left	514.7	74.4	89.4	65.2 g	806.1	66.6	102.6	55.0 g

	CLIP SUMMARY*			
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	53.2	63.5	66.5	574.6
Position #4 - Left	51.7	57.7	60.7	478.4

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 5

CRS PERFORMANCE DATA

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	§	§	§	§
P3 CRS Y	g	‡	‡	‡	‡
P3 CRS Z	g	‡	‡	‡	‡
P3 CRS Resultant	g	§	§	§	§
P4 CRS X	g	8.3	210.2	-57.7	67.5
P4 CRS Y	g	7.8	66.8	-10.6	78.5
P4 CRS Z	g	11.3	224.5	-27.9	67.3
P4 CRS Resultant	g	64.5	67.4	0.1	-32.1

§ - Channel Failed

‡ - Questionable Data

DATA SHEET NO. 5

CRS PERFORMANCE DATA (CONTINUED)

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104

POSITION #3 CRS POST-TEST INSPECTION (Serial No. 3691261P1)

LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	None
Upper Tether Buckle	No	None
Upper Tether Hook	No	None
Vehicle Upper Tether Anchor	No	None
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Vehicle Lower CRS Anchors	No	None
Five Point Harness Connections	No	None
Cracks on CRS	No	None
Fabric Tears on CRS	No	None
Vehicle Seat Structure	No	None
Vehicle Seat Fabric Tears	No	None
Child Dummy	No	None

POSITION #4 CRS POST-TEST INSPECTION (Serial No. E9L02163850)

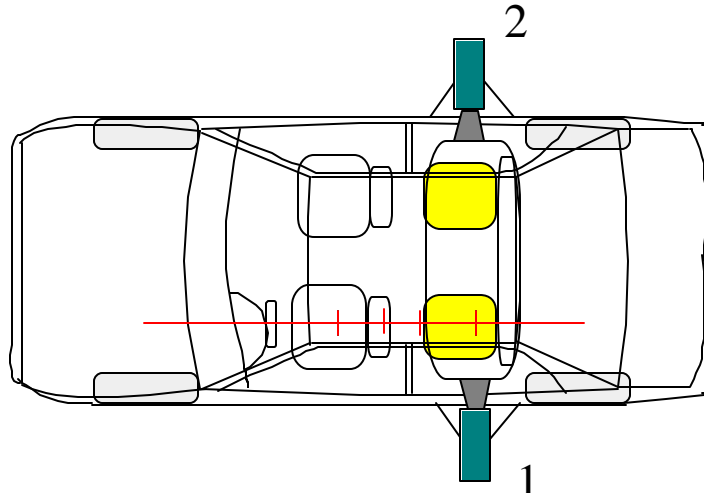
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	None
Upper Tether Buckle	No	None
Upper Tether Hook	No	None
Vehicle Upper Tether Anchor	No	None
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Vehicle Lower CRS Anchors	No	None
Five Point Harness Connections	No	None
Cracks on CRS	No	None
Fabric Tears on CRS	No	None
Vehicle Seat Structure	No	None
Vehicle Seat Fabric Tears	No	None
Child Dummy	No	None

DATA SHEET NO. 6

CRS CAMERA DATA

CRS: Evenflo Vanguard 5 LATCH and top Tether/Britax Roundabout LATCH and top Tether

NHTSA No. M40104



Camera No.	View	Coordinates (millimeters)			Angle** (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3065	1253	1218	-12	13	1000
2	Right side CRS lateral view	2949	1253	1208	-5	13	1000

* Reference (from point of impact); all measurements accurate to within ± 6 mm

** = referenced to horizontal plane

X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

SECTION 3

PHOTOGRAPHS

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DO NOT place rear-facing

FOR YOUR CHILD'S CONTINUED SAFETY

Please take a few moments to promptly fill out and return the attached card.

Although child restraint systems undergo testing and evaluation, it is possible that a child restraint could be recalled.

In case of recall, we can reach you only if we have your name and address, so please send in the card to be on our recall list.

Please fill this card out and mail it NOW, while you are thinking about it.

It's already addressed and we've paid the postage.

Tear off and mail this part

Consumer: Just fill in your name and address. **PLEASE PRINT**

Your name _____

Your street and address _____

City _____ State _____ Zip Code _____

If you prefer, you may register your child restraint system via the Internet by visitng www.evenflo.com

You will need the model number and date of manufacture (both of which appear on the card below).

Manufactured in 22NOV03
Model # 3691261 P1

PEEL OFF

25804620 5/03

Figure 3-1 CLOSE-UP VIEW OF POSITION 3 CRS LABEL



Figure 3-2 PRE-TEST FRONTAL VIEW OF POSITION 3 CRS



Figure 3-3 POST-TEST FRONTAL VIEW OF POSITION 3 CRS



Figure 3-4 PRE-TEST REAR VIEW OF POSITION 3 CRS



Figure 3-5 POST-TEST REAR VIEW OF POSITION 3 CRS



Figure 3-6 PRE-TEST LEFT SIDE VIEW OF POSITION 3 CRS



Figure 3-7 POST-TEST LEFT SIDE VIEW OF POSITION 3 CRS



Figure 3-8 PRE-TEST RIGHT SIDE VIEW OF POSITION 3 CRS



Figure 3-9 POST-TEST RIGHT SIDE VIEW OF POSITION 3 CRS

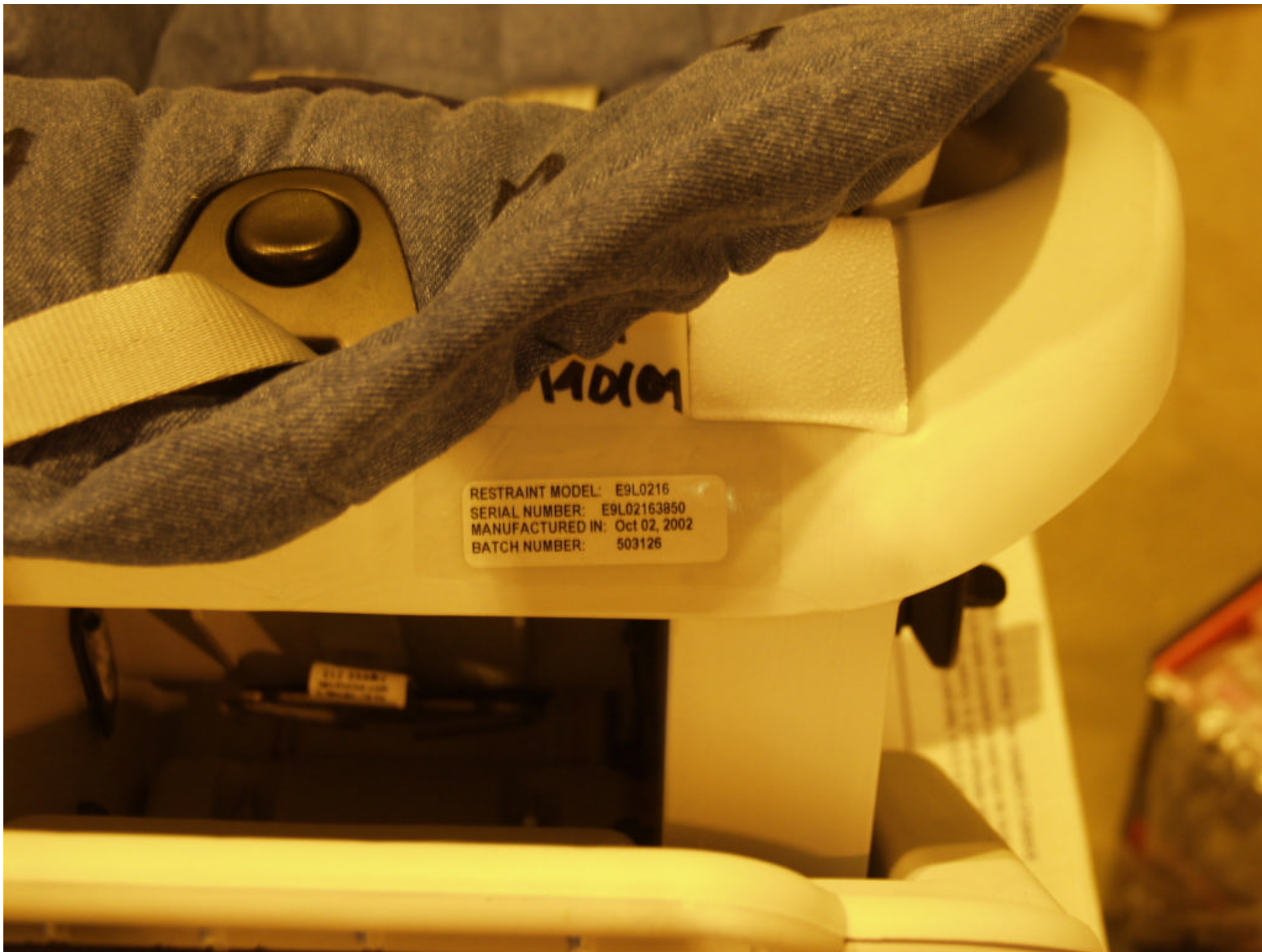


Figure 3-10 CLOSE-UP VIEW OF POSITION 4 CRS LABEL



Figure 3-11 PRE-TEST FRONTAL VIEW OF POSITION 4 CRS



Figure 3-12 POST-TEST FRONTAL VIEW OF POSITION 4 CRS

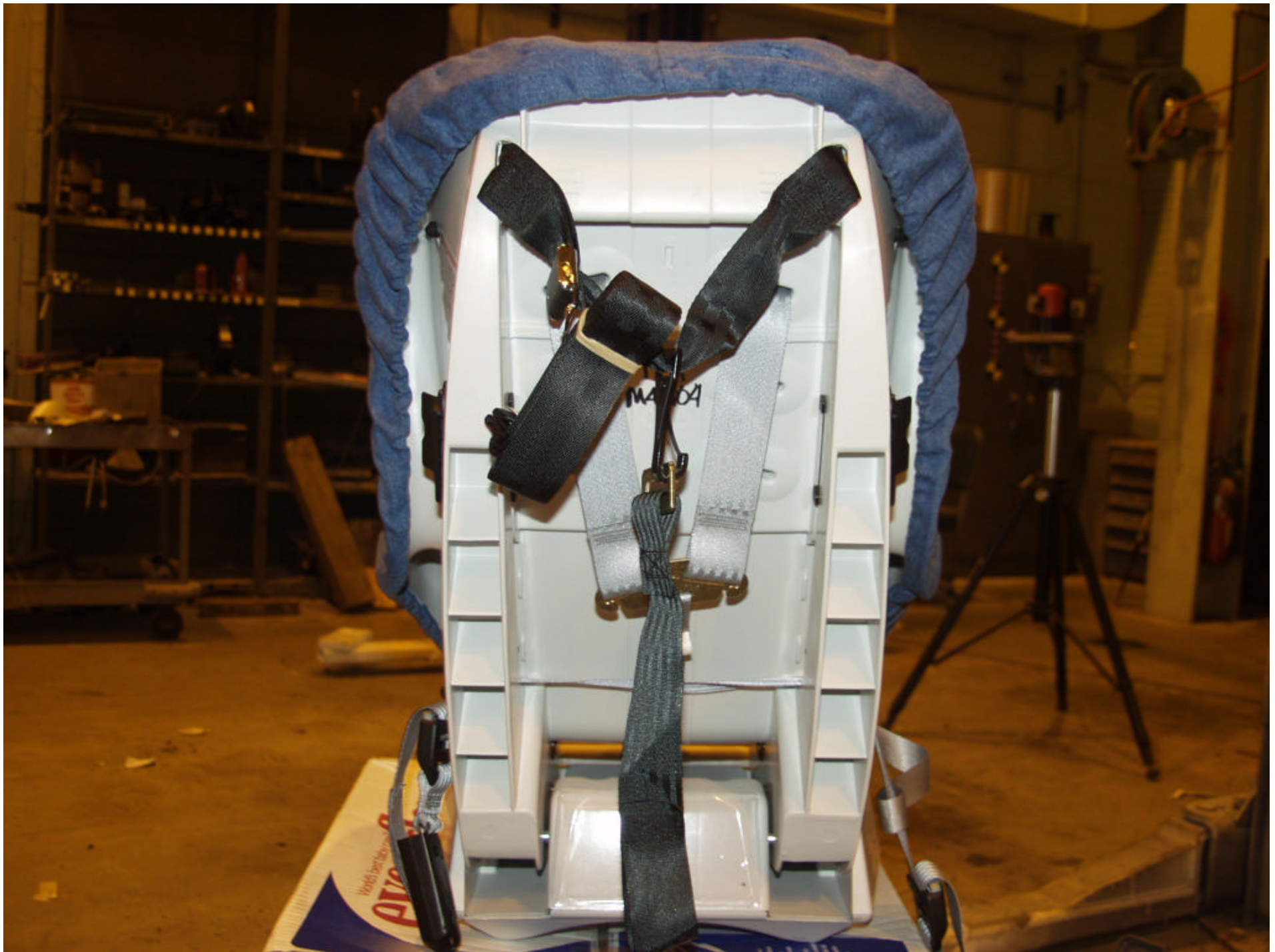


Figure 3-13 PRE-TEST REAR VIEW OF POSITION 4 CRS



Figure 3-14 POST-TEST REAR VIEW OF POSITION 4 CRS



Figure 3-15 PRE-TEST LEFT SIDE VIEW OF POSITION 4 CRS



Figure 3-16 POST-TEST LEFT SIDE VIEW OF POSITION 4 CRS



Figure 3-17 PRE-TEST RIGHT SIDE VIEW OF POSITION 4 CRS



Figure 3-18 POST-TEST RIGHT SIDE VIEW OF POSITION 4 CRS



Figure 3-19 PRE-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-20 POST-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-21 PRE-TEST POSITION 4 LEFT SIDE VIEW



Figure 3-22 POST-TEST POSITION 4 LEFT SIDE VIEW



Figure 3-23 PRE-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-24 POST-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-25 PRE-TEST POSITION 4 RIGHT SIDE VIEW



Figure 3-26 POST-TEST POSITION 4 RIGHT SIDE VIEW



Figure 3-27 PRE-TEST POSITION 3 FRONT VIEW



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Figure 3-28 POST-TEST POSITION 3 FRONT VIEW



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Figure 3-29 PRE-TEST POSITION 4 FRONT VIEW



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Figure 3-30 POST-TEST POSITION 4 FRONT VIEW

SECTION 4

CHILD DUMMY RESPONSE AND CRS DATA TRACES

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3	V1P3 Head z [g, CFC_1000]	4-6
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5	V1P3 Head Rear z [g, CFC_1000]	4-8
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11	V1P3 Upper Neck My [N-m, CFC_600]	4-14
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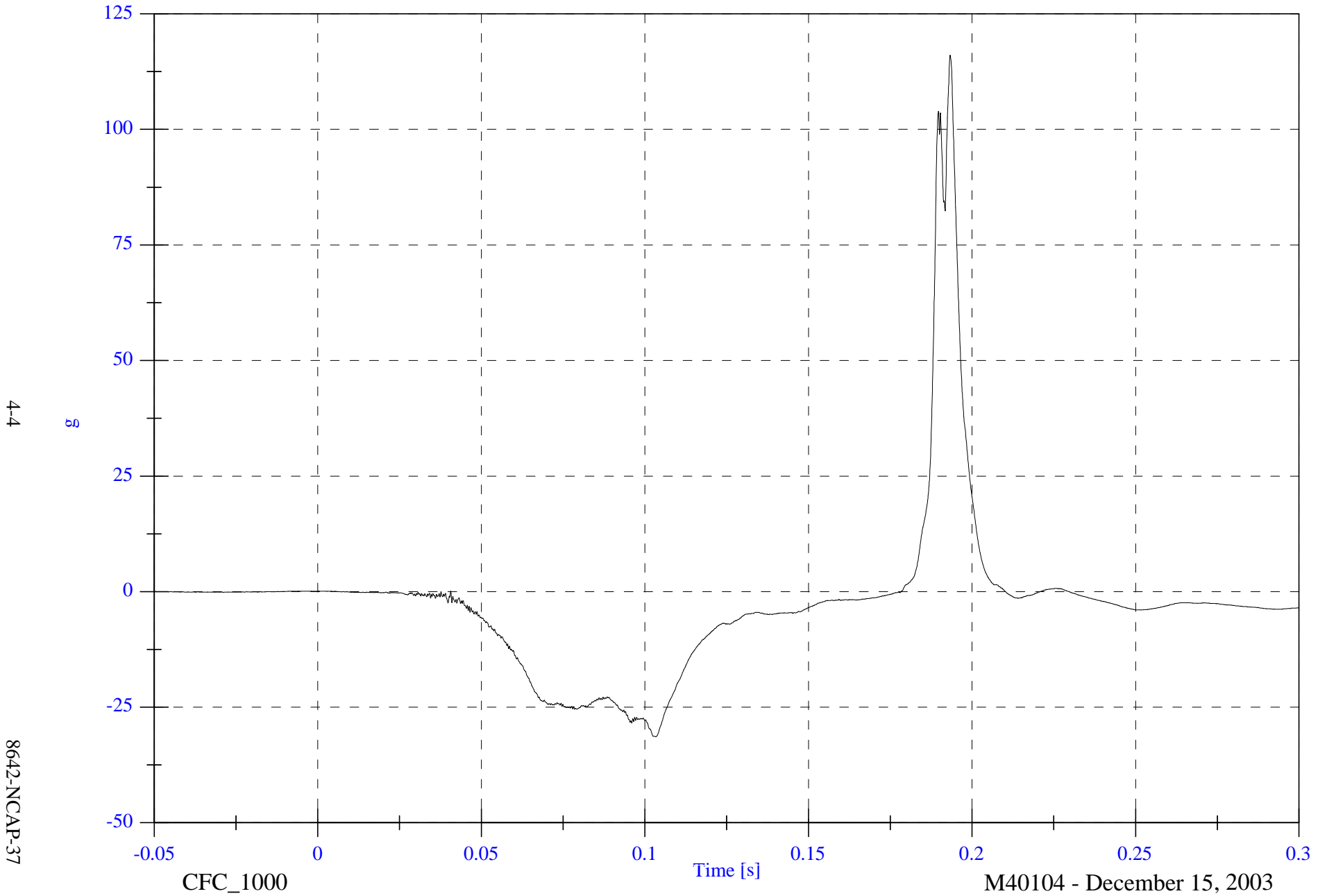
PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
50	V1P4 Lower Neck Mz [N-m, CFC_600]	4-53
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78	V1 P4 Seat x Displacement [mm, CFC_180]	4-81
79	V1 P4 Seat y Displacement [mm, CFC_180]	4-82
80	V1 P4 Seat z Displacement [mm, CFC_180]	4-83

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 116.0 [g] at 0.193 [s]

Min: -31.4 [g] at 0.103 [s]

V1P3 Head x



4-4

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CFC_1000

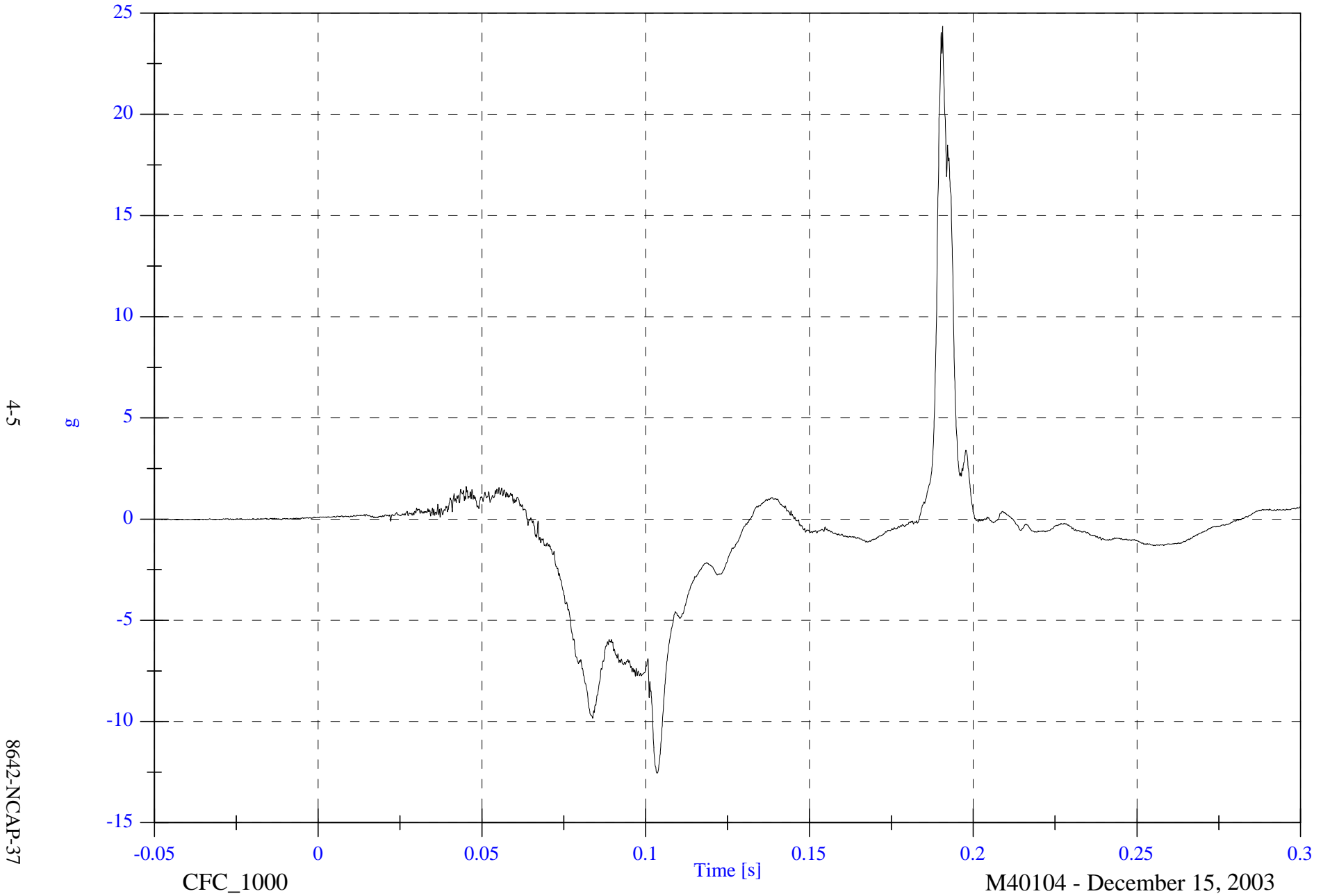
Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 24.4 [g] at 0.191 [s]
Min: -12.5 [g] at 0.103 [s]

V1P3 Head y

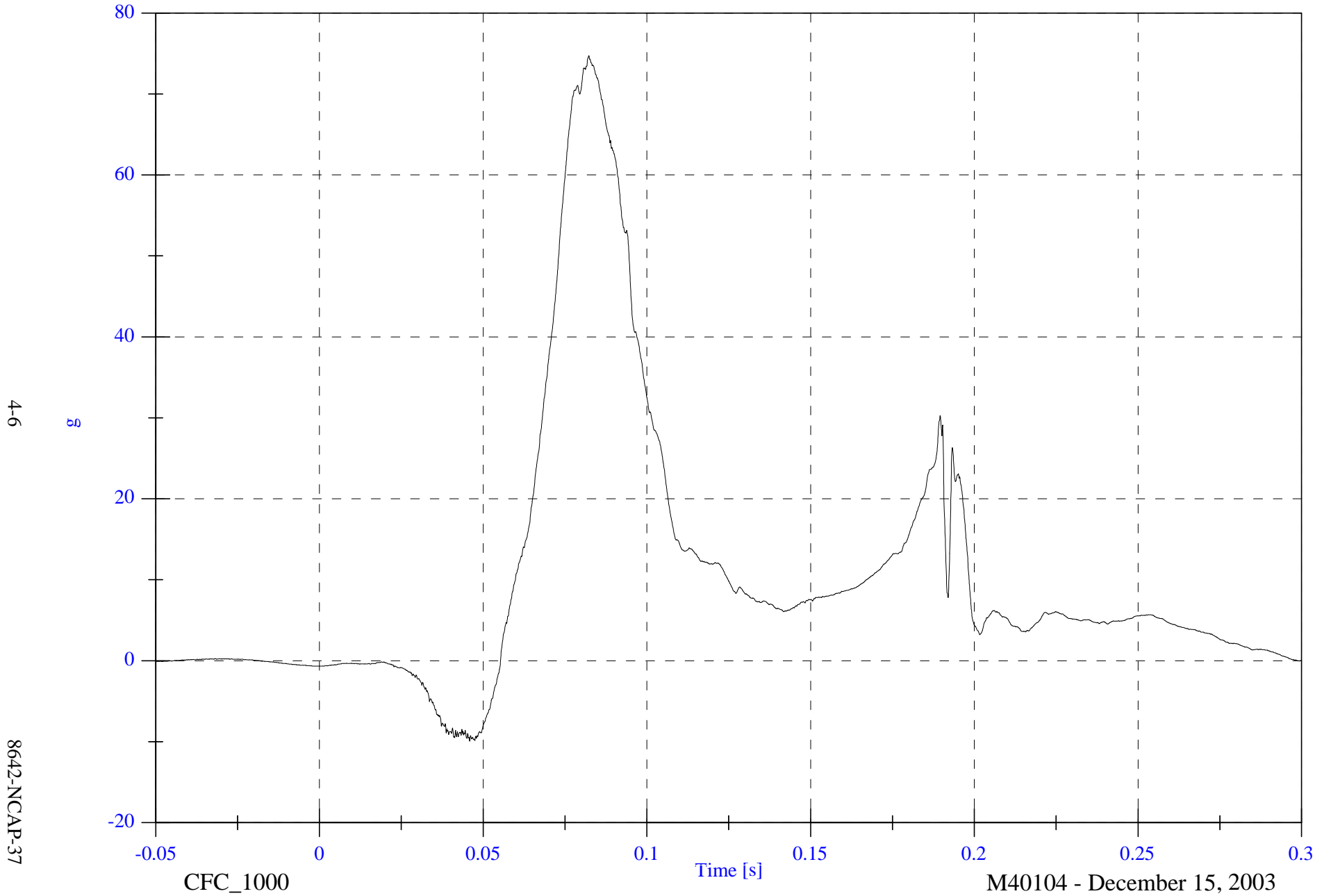


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Head z

Max: 74.8 [g] at 0.082 [s]

Min: -9.9 [g] at 0.046 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Head Resultant

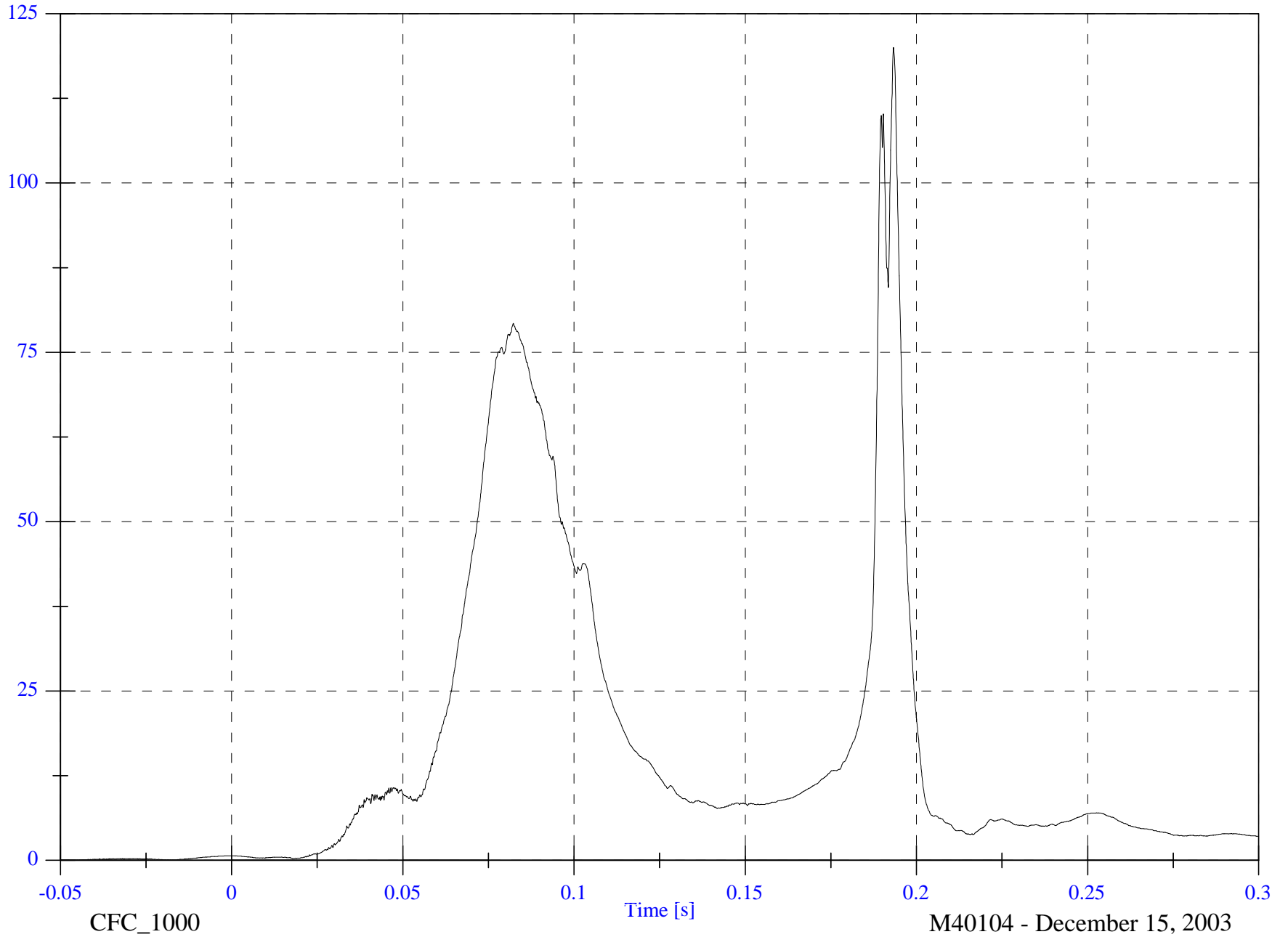
Max: 120.0 [g] at 0.193 [s]

Min: 0.0 [g] at -0.046 [s]

4-7

g

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CFC_1000

Time [s]

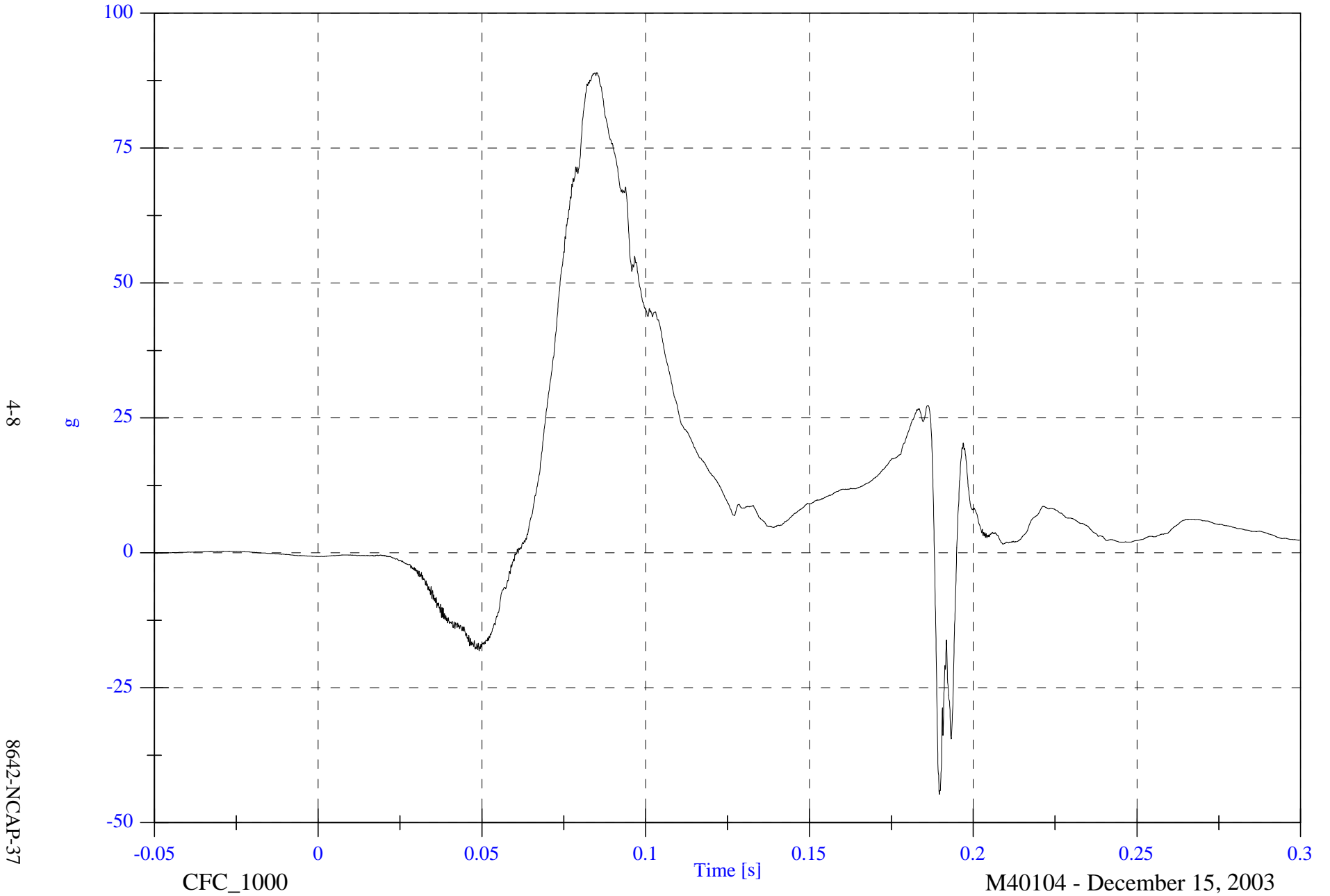
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Head Red z

Max: 89.0 [g] at 0.085 [s]

Min: -44.8 [g] at 0.190 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 159.5 [N] at 0.190 [s]

Min: -730.0 [N] at 0.102 [s]

V1P3 Upper Neck Fx



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CFC_1000

Time [s]

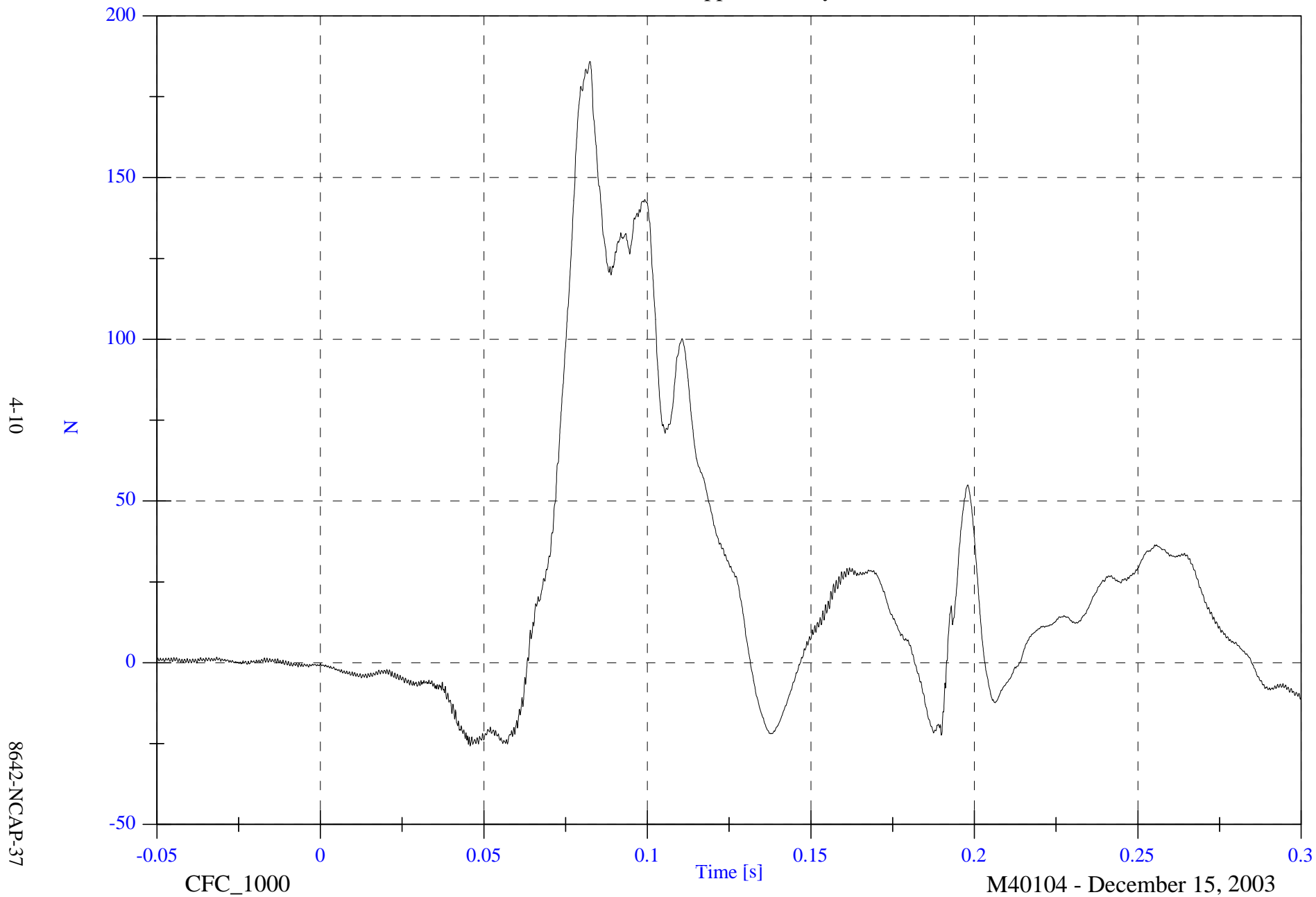
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 186.0 [N] at 0.082 [s]

Min: -25.7 [N] at 0.046 [s]

V1P3 Upper Neck Fy



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CFC_1000

Time [s]

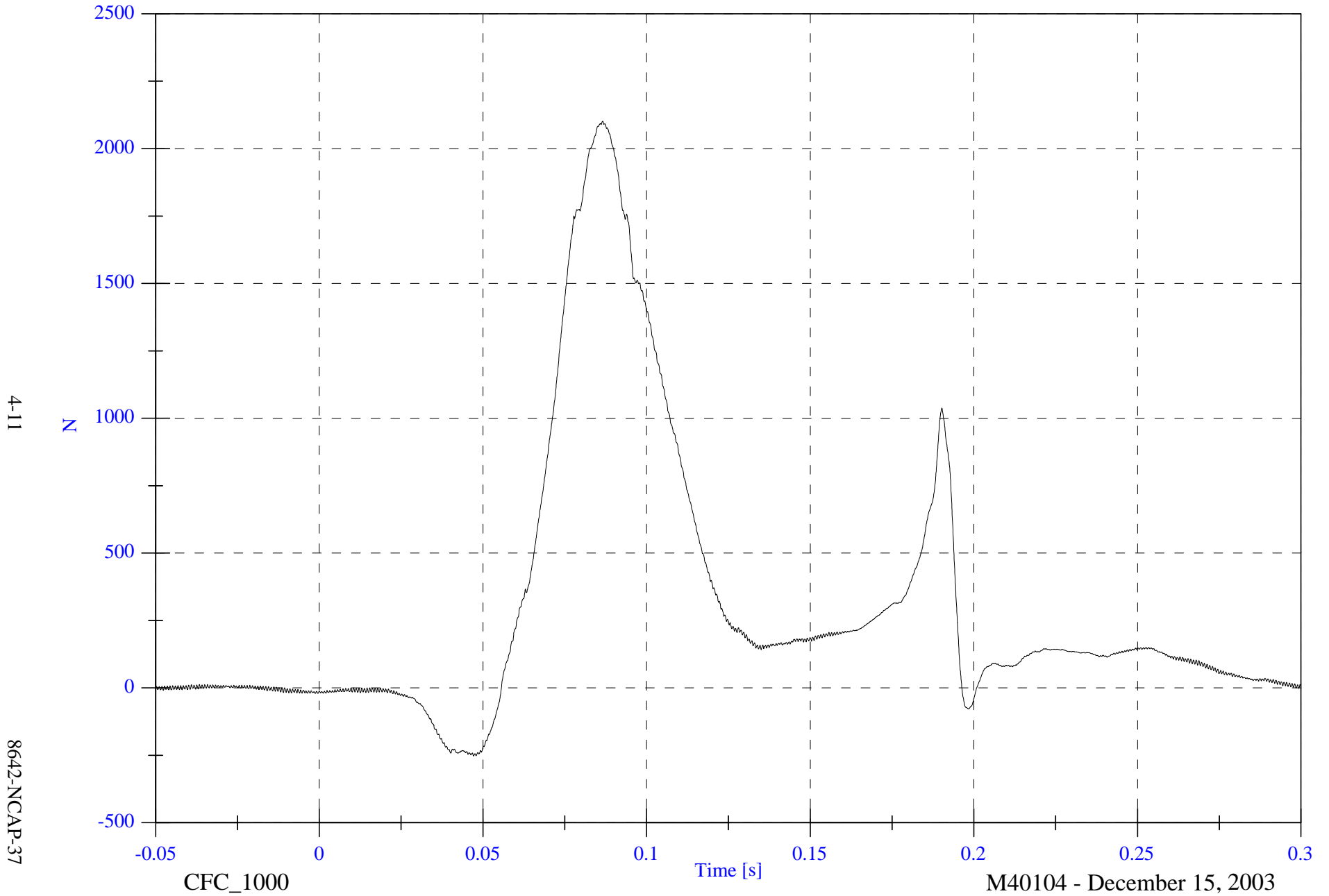
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 2101.7 [N] at 0.087 [s]

Min: -252.9 [N] at 0.047 [s]

V1P3 Upper Neck Fz



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CFC_1000

Time [s]

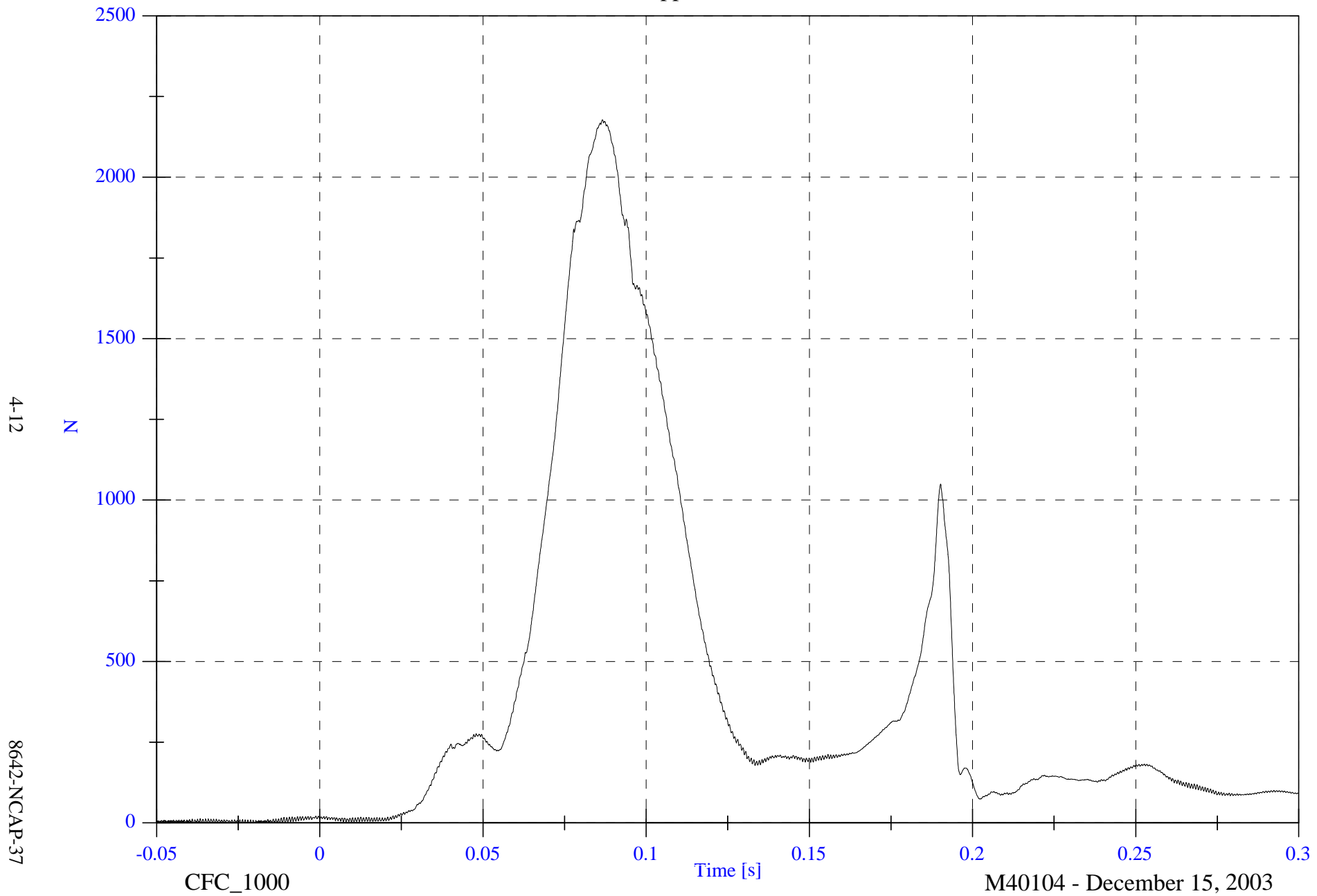
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Upper Neck F Resultant

Max: 2178.0 [N] at 0.087 [s]

Min: 0.3 [N] at -0.024 [s]



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CFC_1000

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

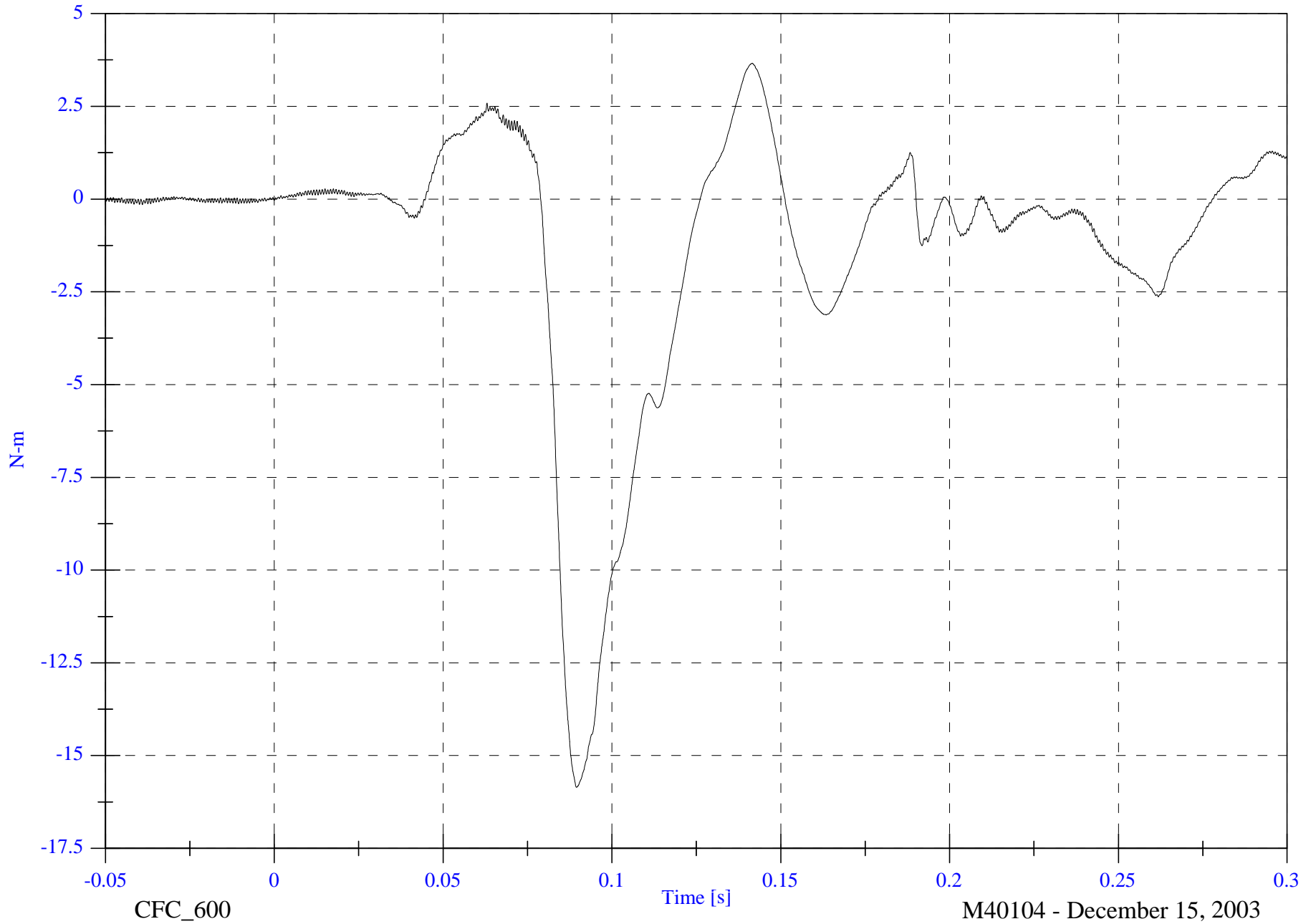
V1P3 Upper Neck Mx

Max: 3.7 [N-m] at 0.142 [s]

Min: -15.9 [N-m] at 0.089 [s]

4-13

8642-NCAP-37



CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

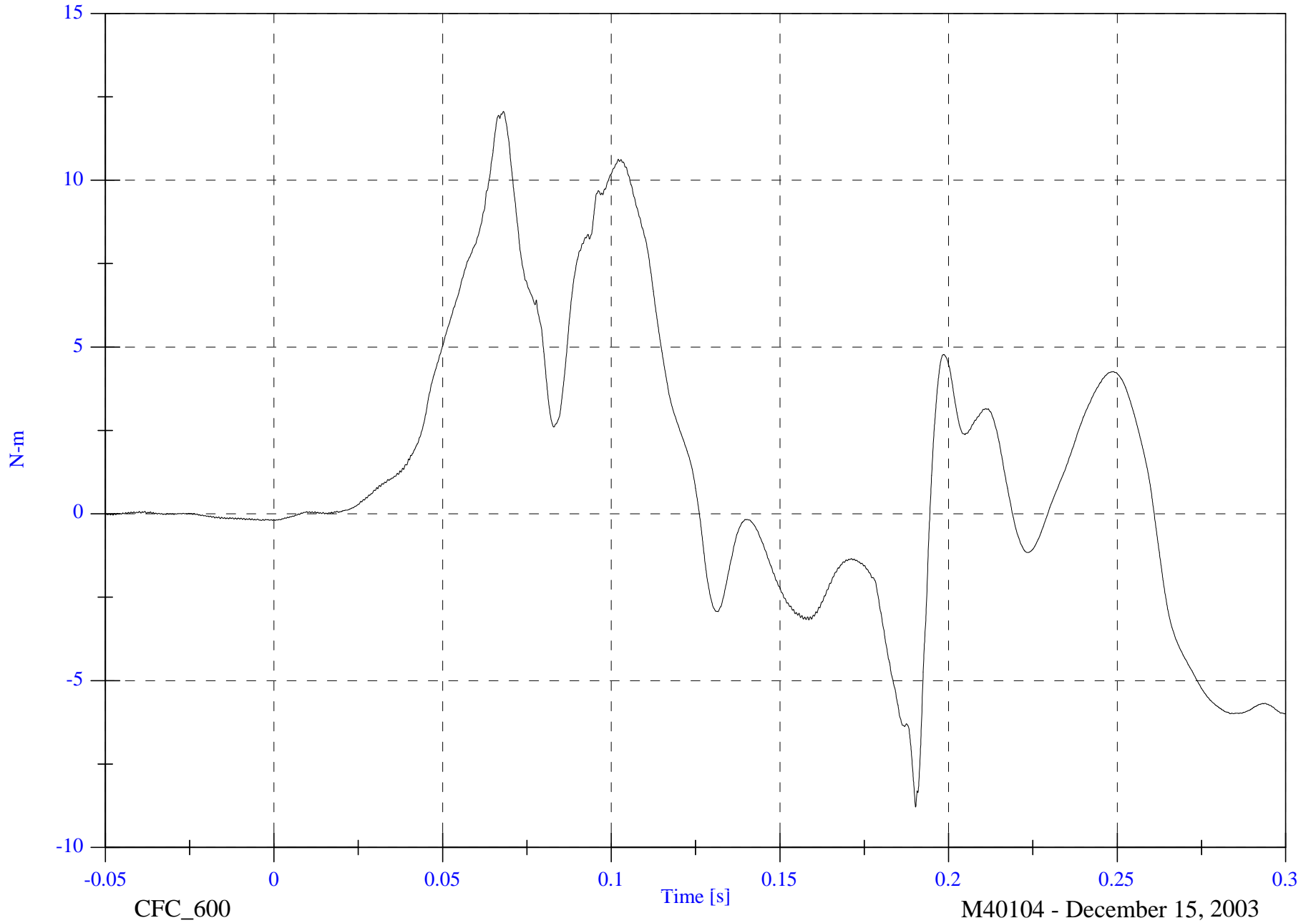
V1P3 Upper Neck My

Max: 12.1 [N-m] at 0.068 [s]

Min: -8.8 [N-m] at 0.190 [s]

4-14

8642-NCAP-37



CFC_600

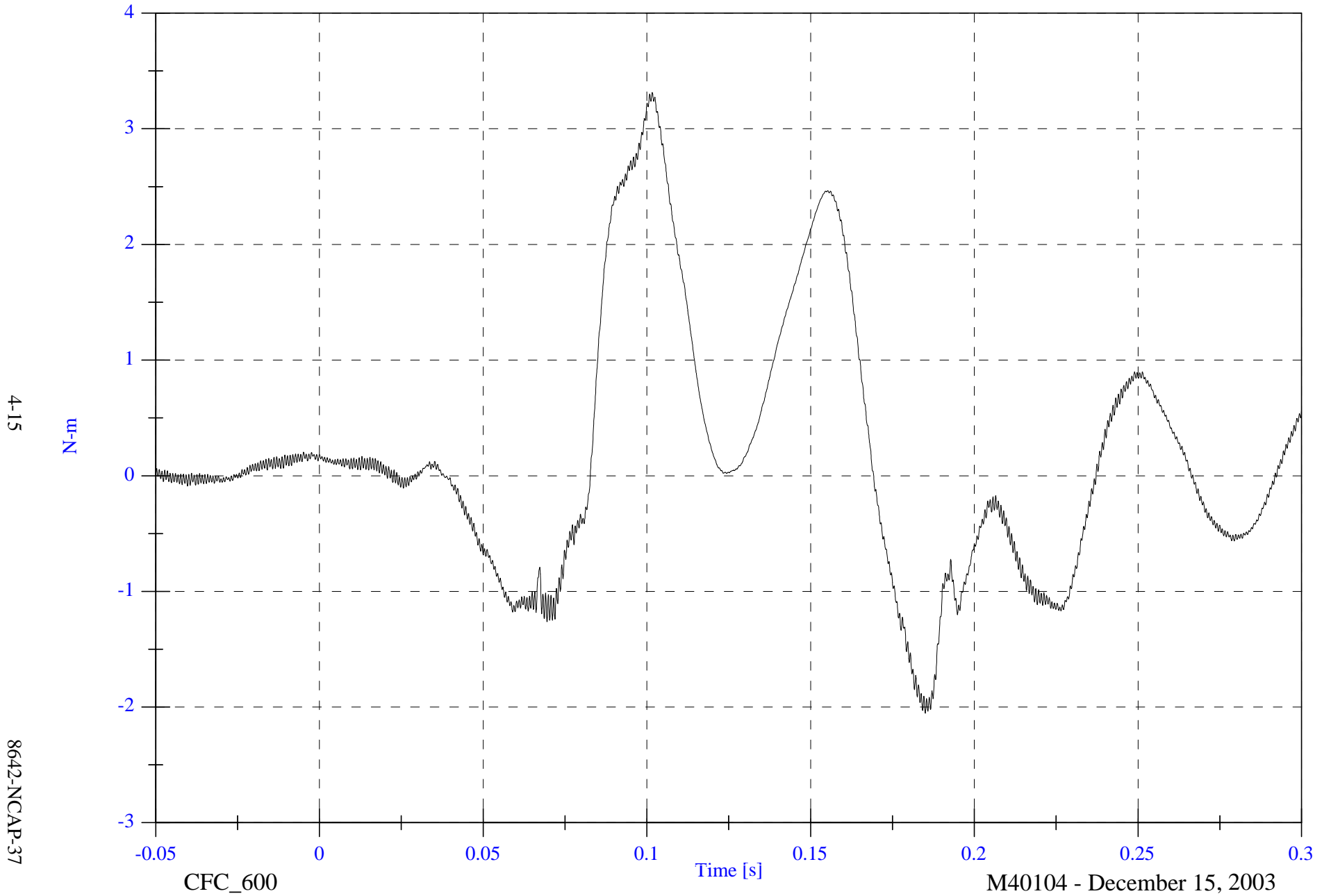
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 3.3 [N-m] at 0.102 [s]

Min: -2.1 [N-m] at 0.185 [s]

V1P3 Upper Neck Mz



4-15

8642-NCAP-37

CFC_600

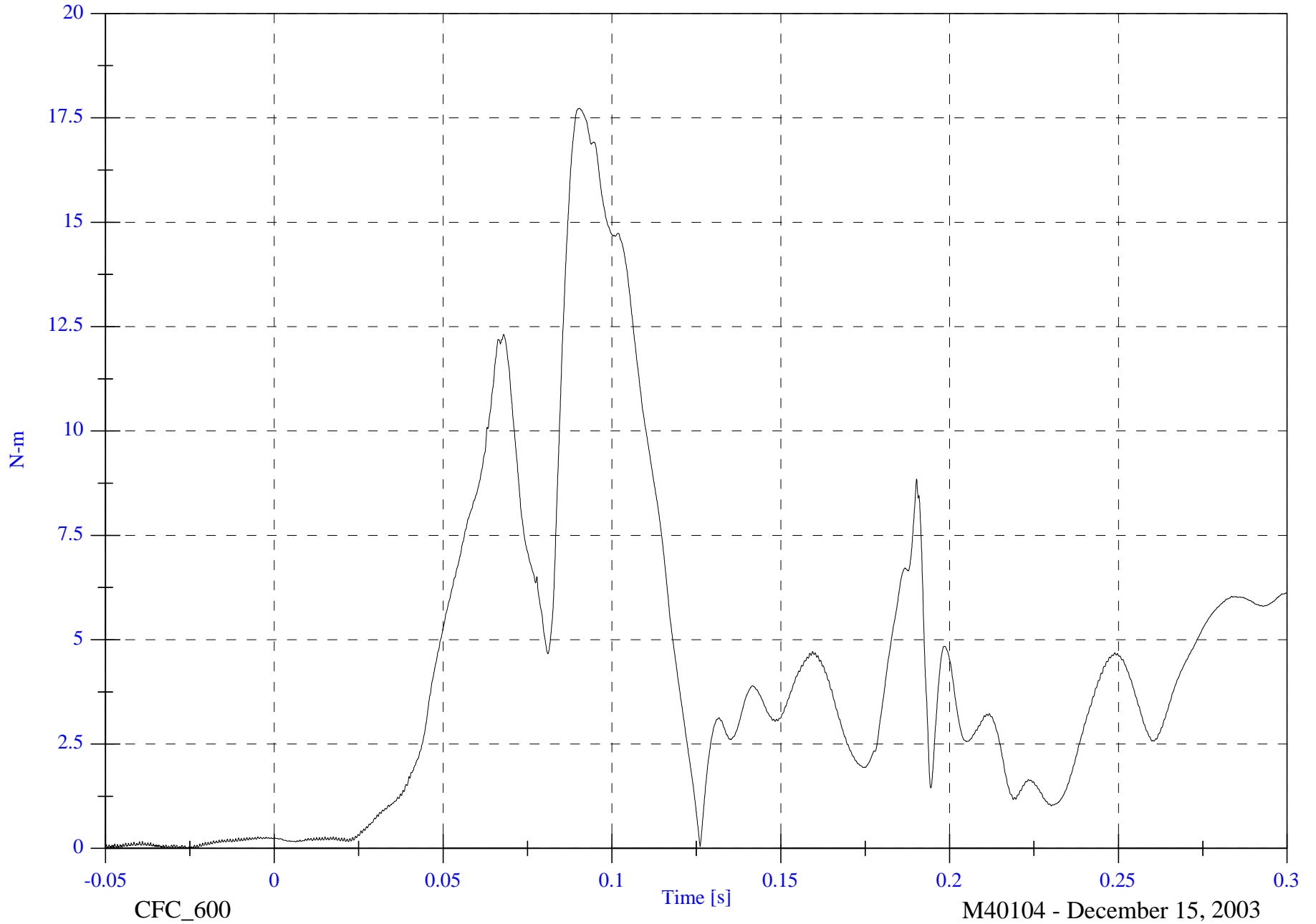
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Upper Neck M Resultant

Max: 17.7 [N-m] at 0.090 [s]

Min: 0.0 [N-m] at -0.026 [s]



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CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Lower Neck Fx

Max: 346.6 [N] at 0.191 [s]

Min: -1133.4 [N] at 0.075 [s]



4-17

8642-NCAP-37

CFC_1000

Time [s]

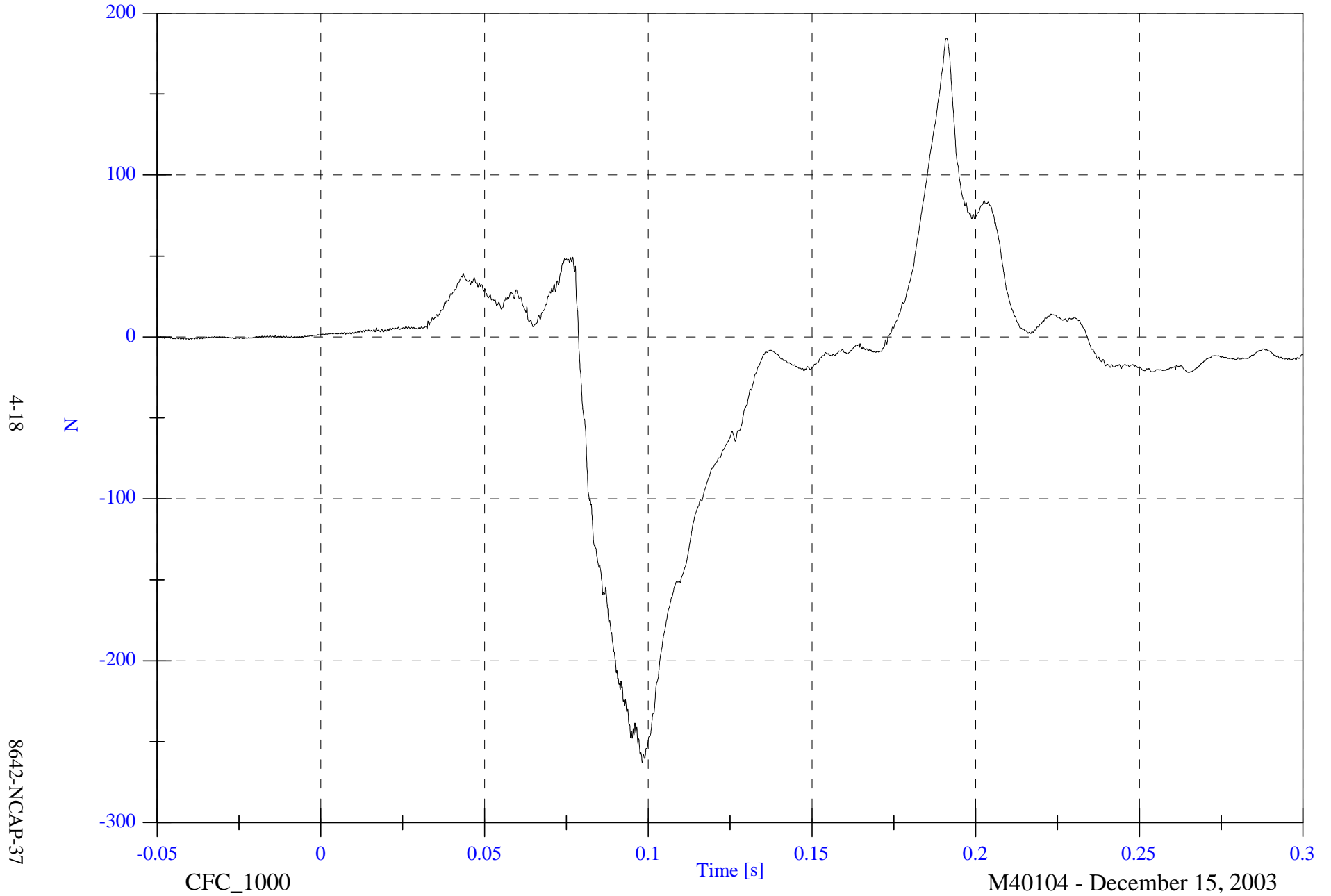
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 184.6 [N] at 0.191 [s]

Min: -262.8 [N] at 0.098 [s]

V1P3 Lower Neck Fy



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8642-NCAP-37

CFC_1000

Time [s]

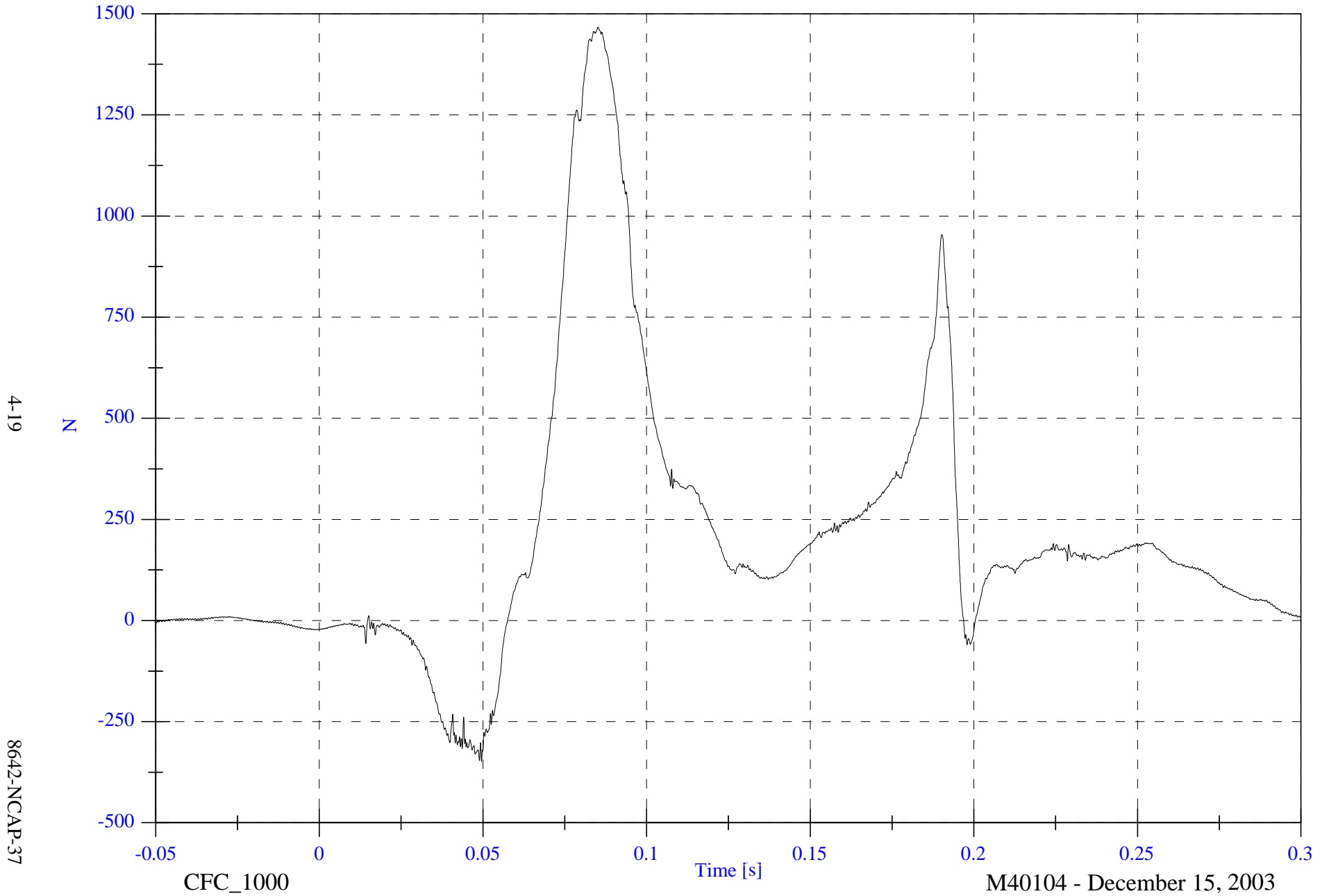
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1467.1 [N] at 0.085 [s]

Min: -348.7 [N] at 0.050 [s]

V1P3 Lower Neck Fz



4-19

8642-NCAP-37

CFC_1000

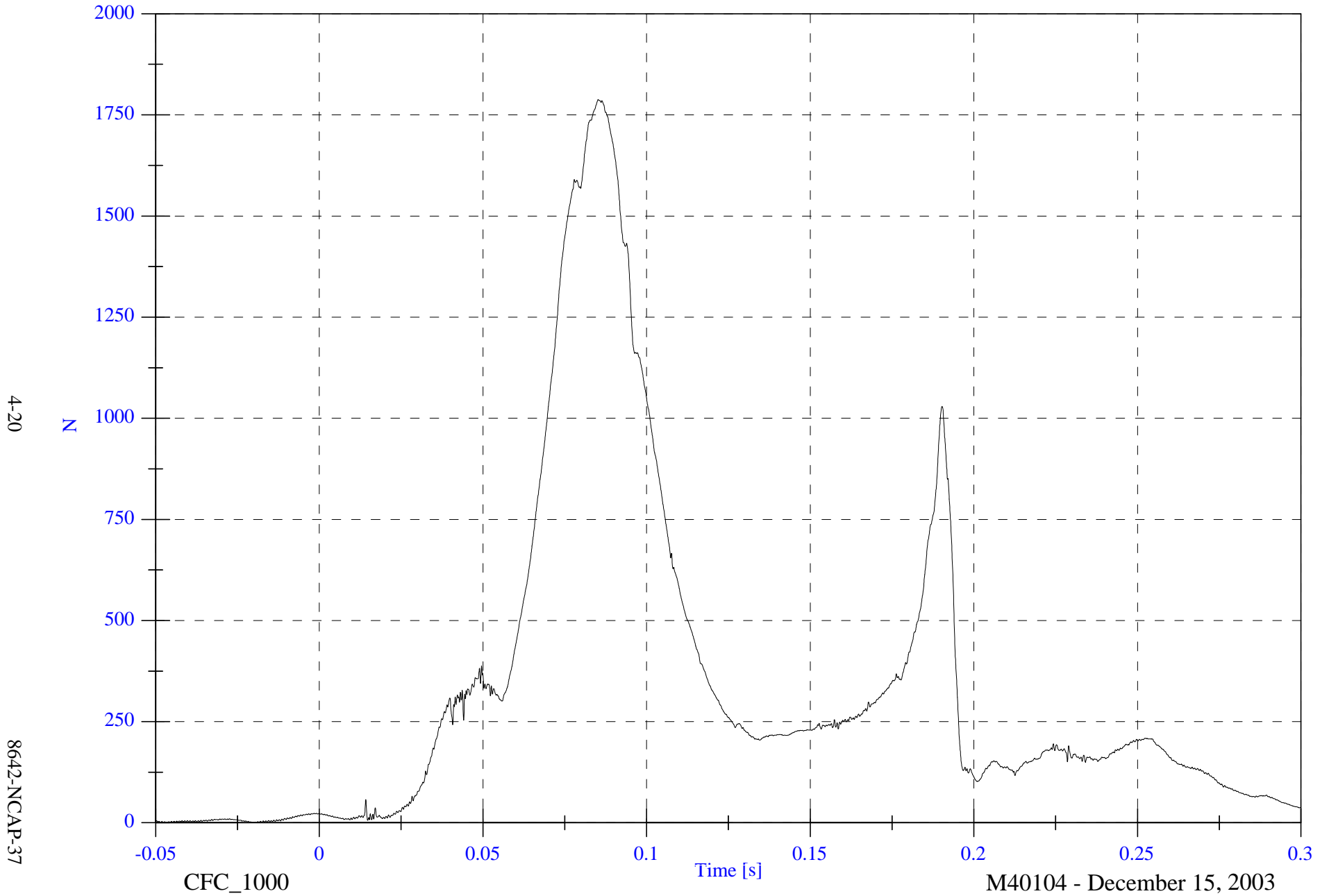
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1788.2 [N] at 0.085 [s]

V1P3 Lower Neck F Resultant

Min: 0.5 [N] at -0.049 [s]



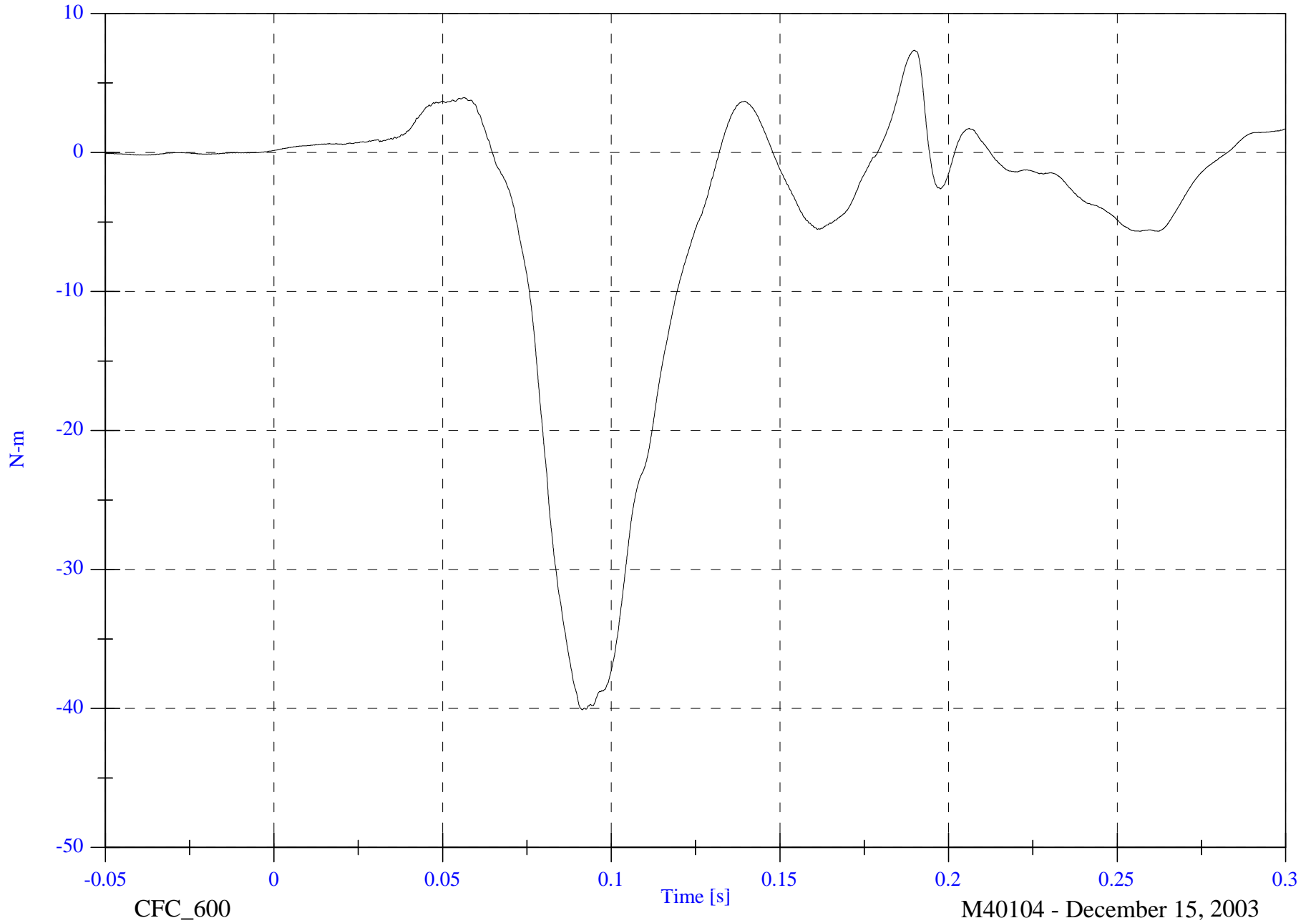
4-20

8642-NCAP-37

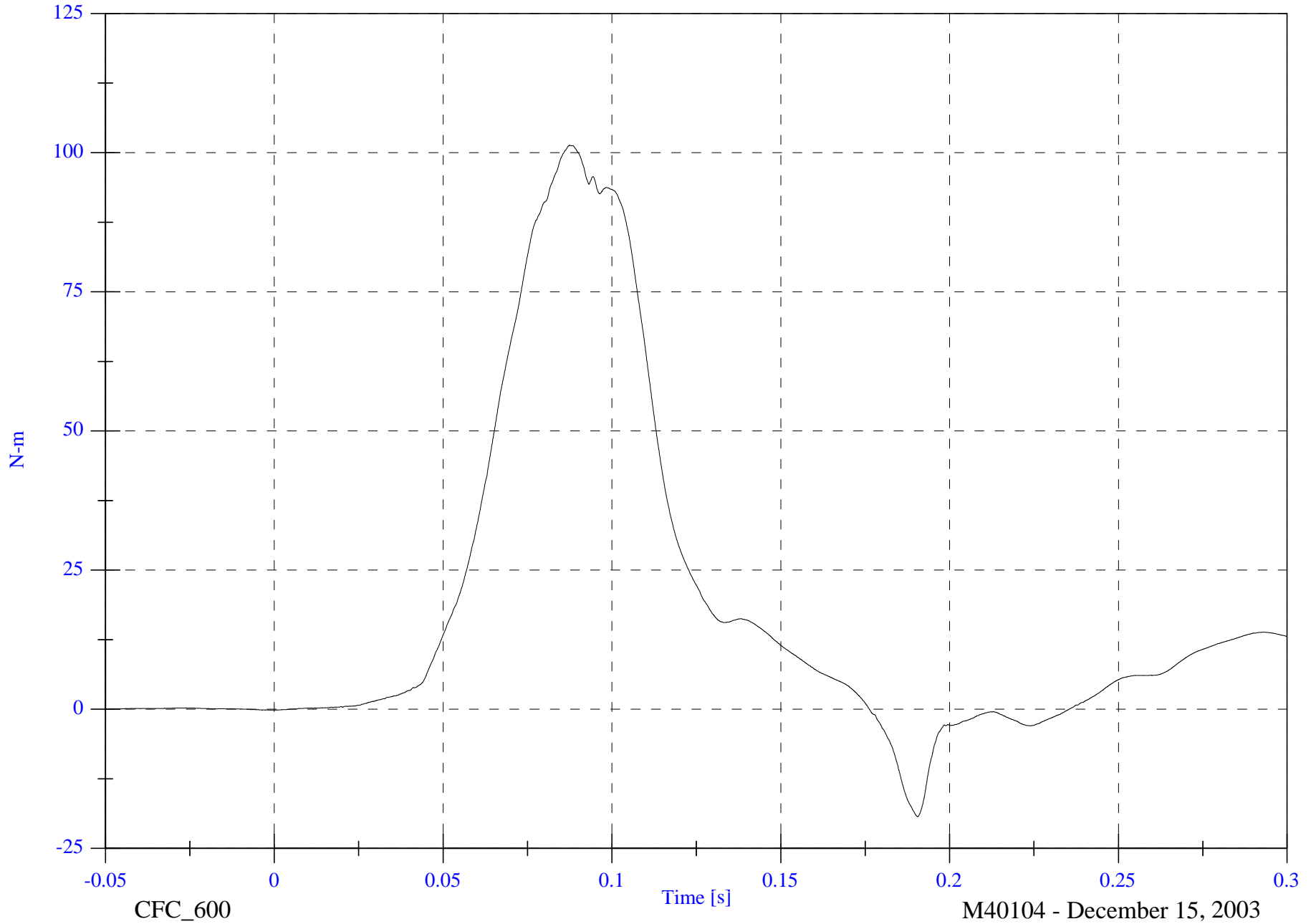
CFC_1000

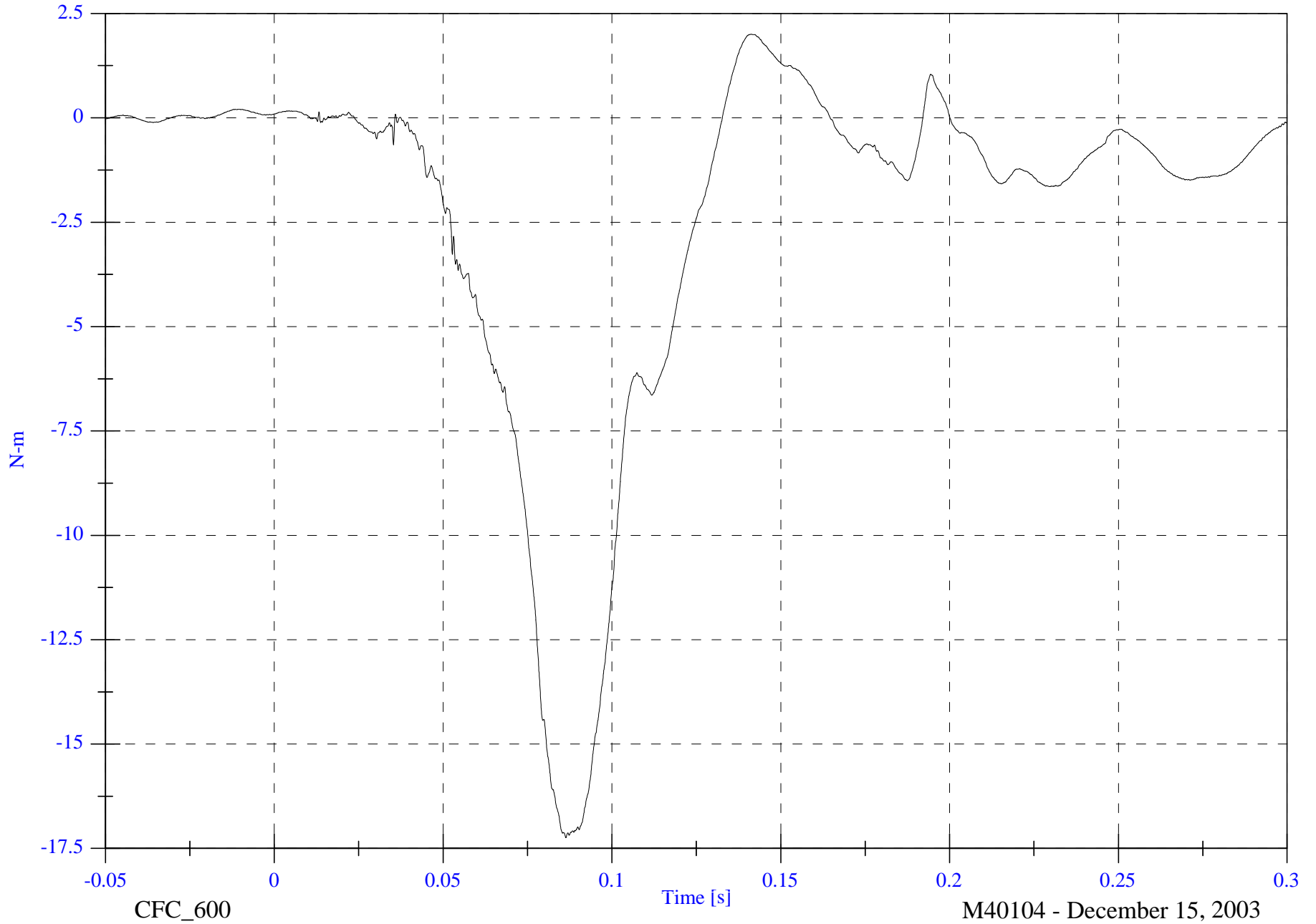
Time [s]

M40104 - December 15, 2003



V1P3 Lower Neck My





2004 NCAP Test 1 2004 Chevrolet Malibu

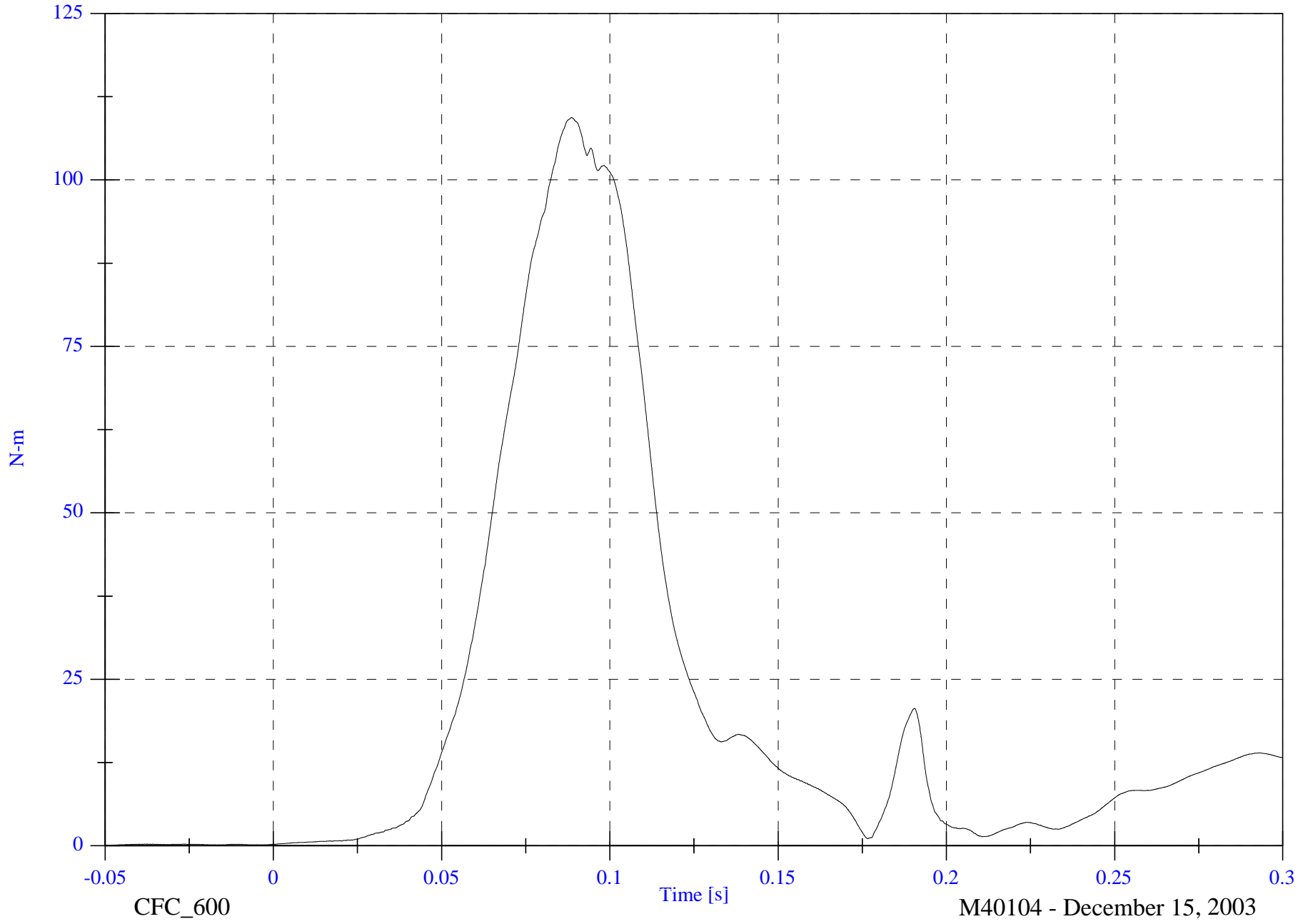
V1P3 Lower Neck M Resultant

Max: 109.4 [N-m] at 0.089 [s]

Min: 0.1 [N-m] at -0.049 [s]

4-24

8642-NCAP-37



CFC_600

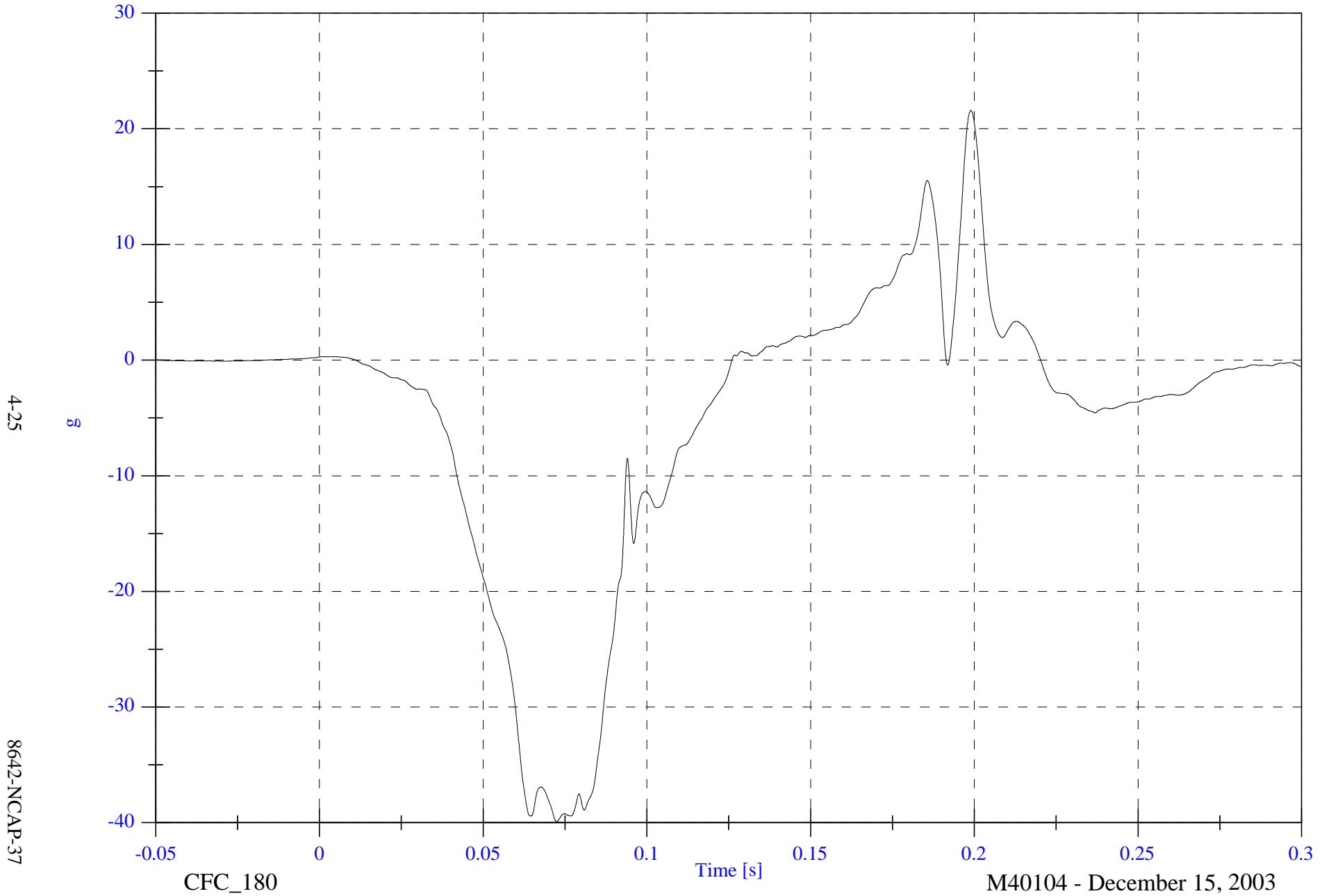
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP3 Chest x

Max: 21.6 [g] at 0.199 [s]

Min: -39.9 [g] at 0.073 [s]



4-25

8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP3 Chest y

Max: 8.6 [g] at 0.199 [s]

Min: -8.7 [g] at 0.077 [s]

4-26

8642-NCAP-37

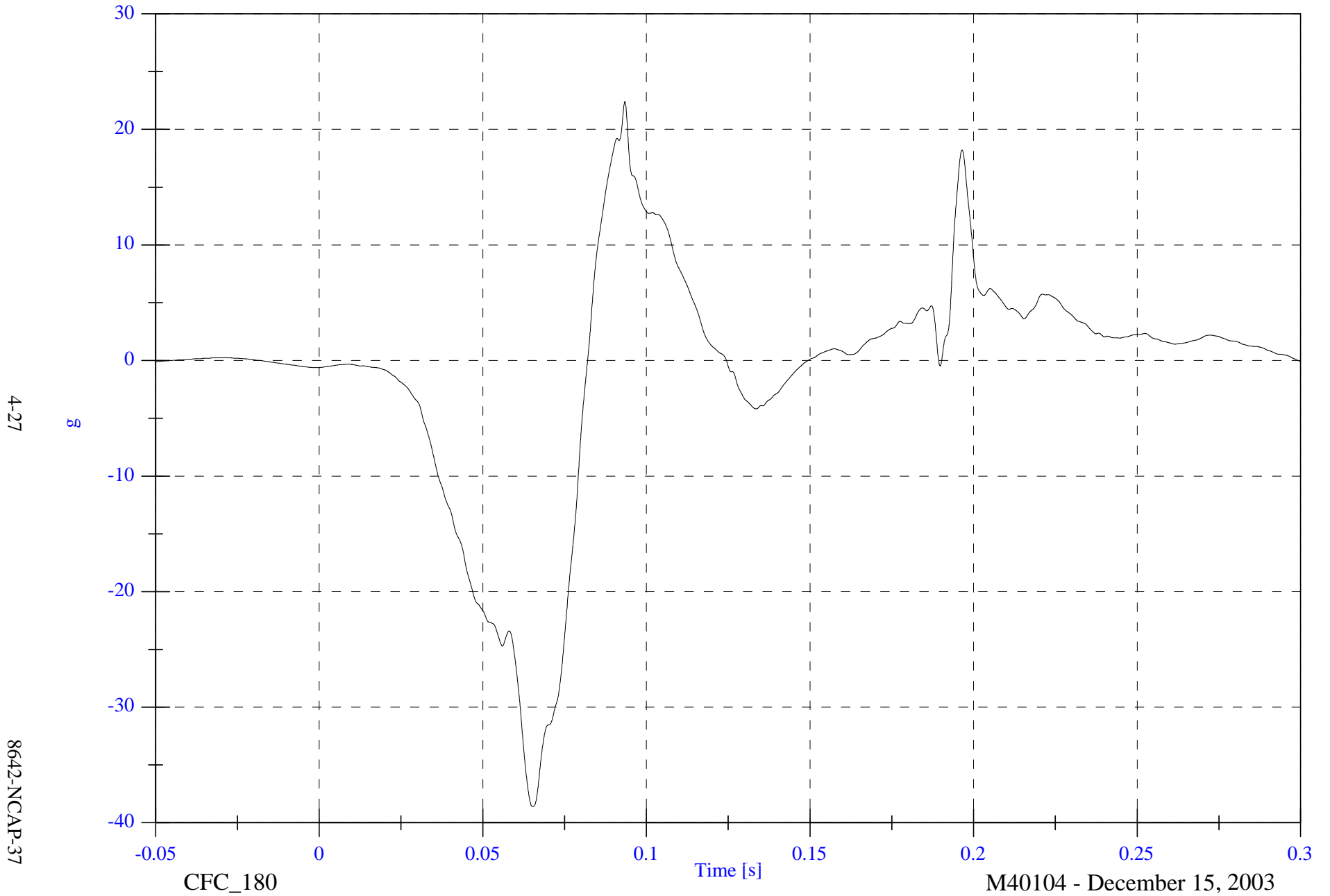


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP3 Chest z

Max: 22.4 [g] at 0.093 [s]

Min: -38.6 [g] at 0.065 [s]



4-27

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

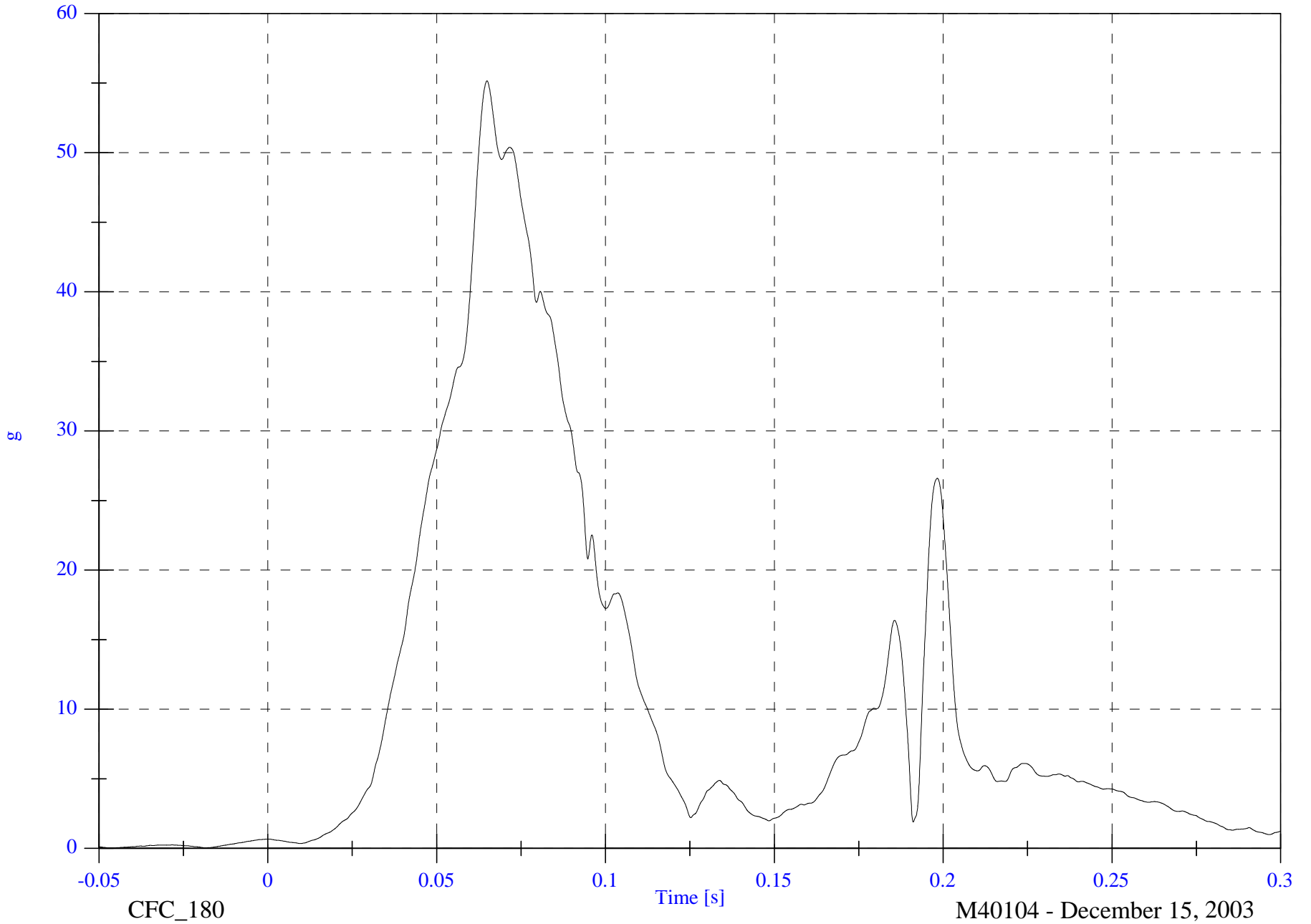
V1P3 Chest Resultant

Max: 55.2 [g] at 0.065 [s]

Min: 0.0 [g] at -0.046 [s]

4-28

8642-NCAP-37



CFC_180

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

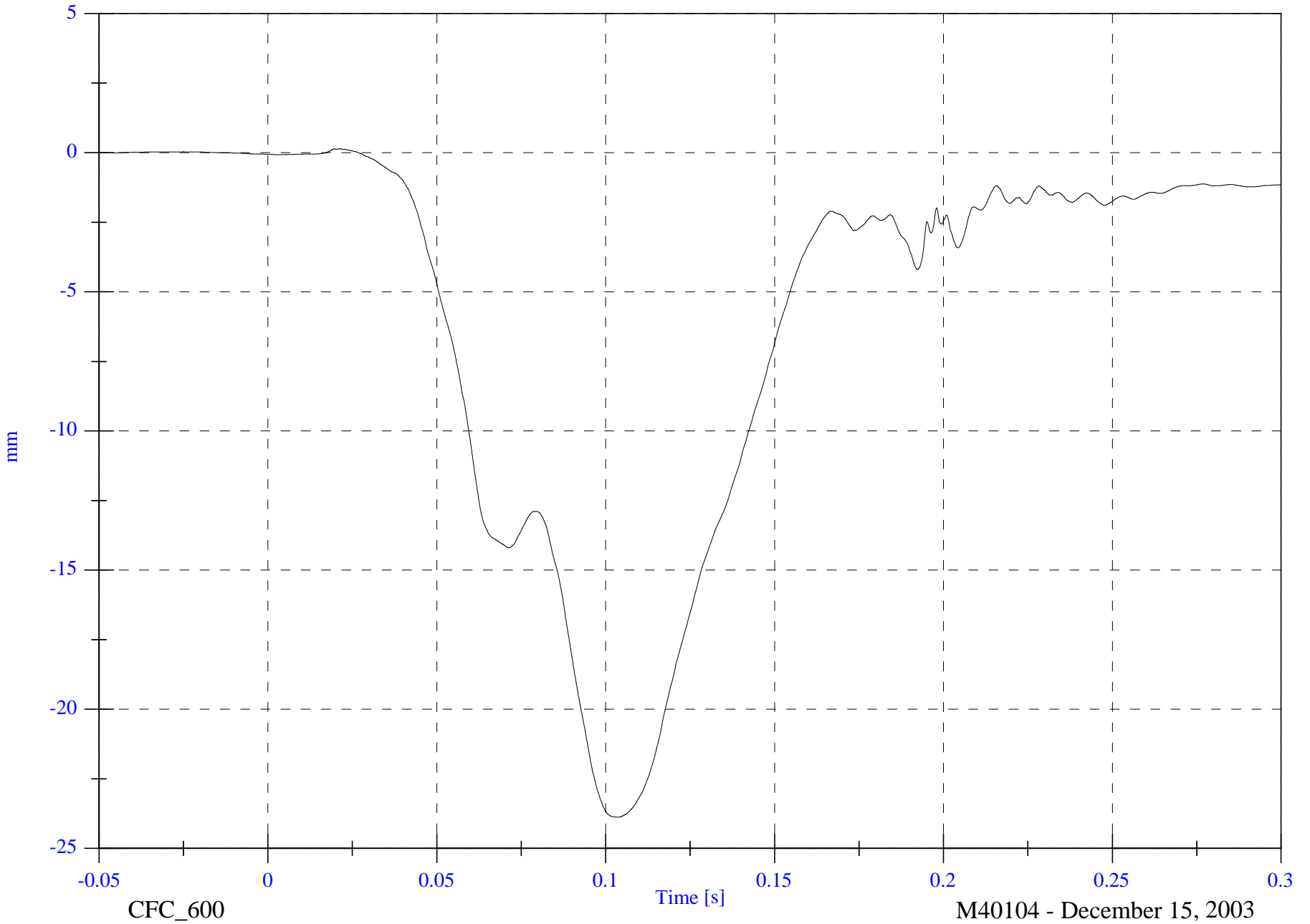
V1P3 Chest Compression

Max: 0.1 [mm] at 0.021 [s]

Min: -23.9 [mm] at 0.103 [s]

4-29

8642-NCAP-37



CFC_600

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Pelvic x

Max: 14.3 [g] at 0.130 [s]

Min: -57.0 [g] at 0.065 [s]

4-30

8642-NCAP-37

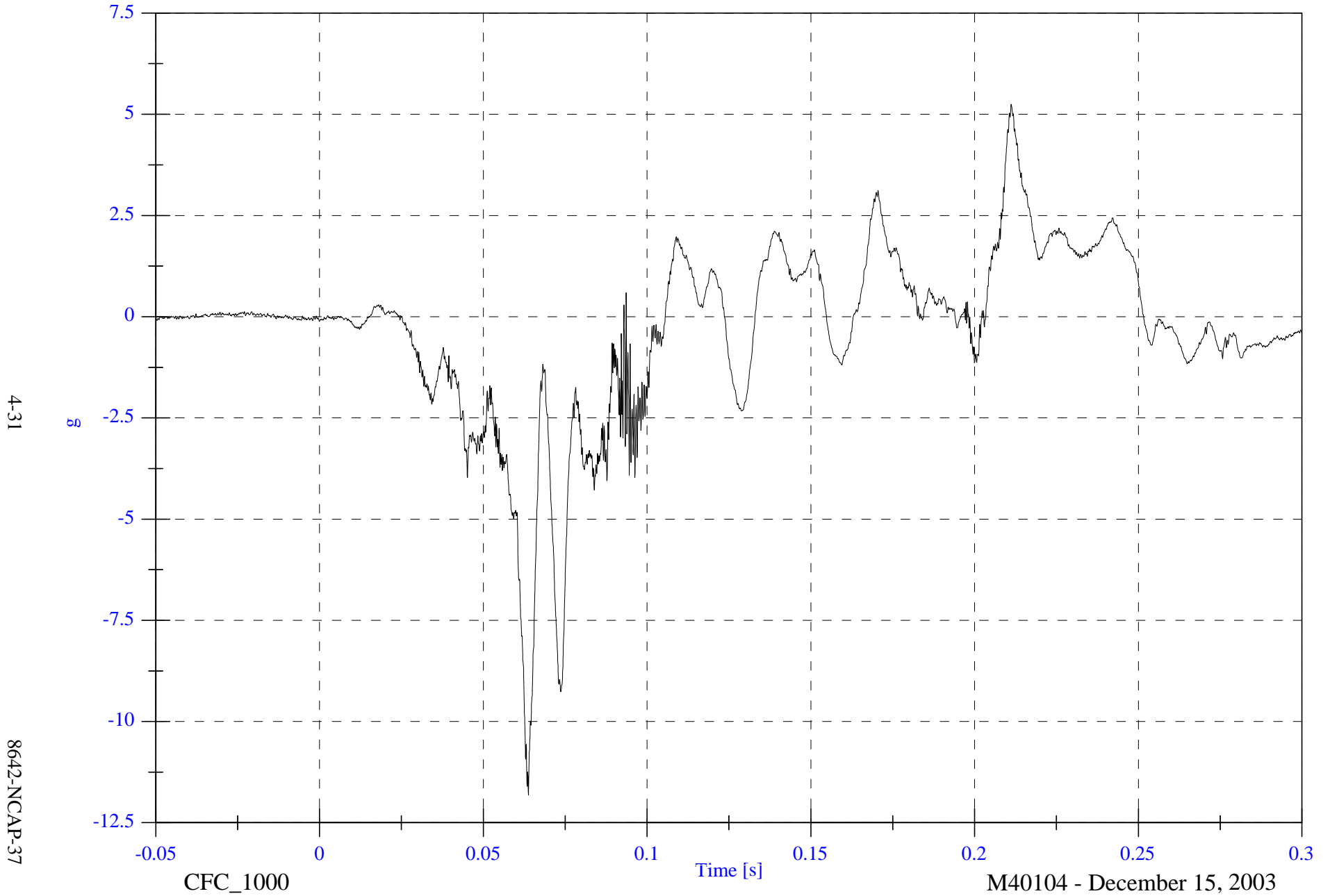


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 5.2 [g] at 0.211 [s]

Min: -11.8 [g] at 0.064 [s]

V1P3 Pelvic y



4-31

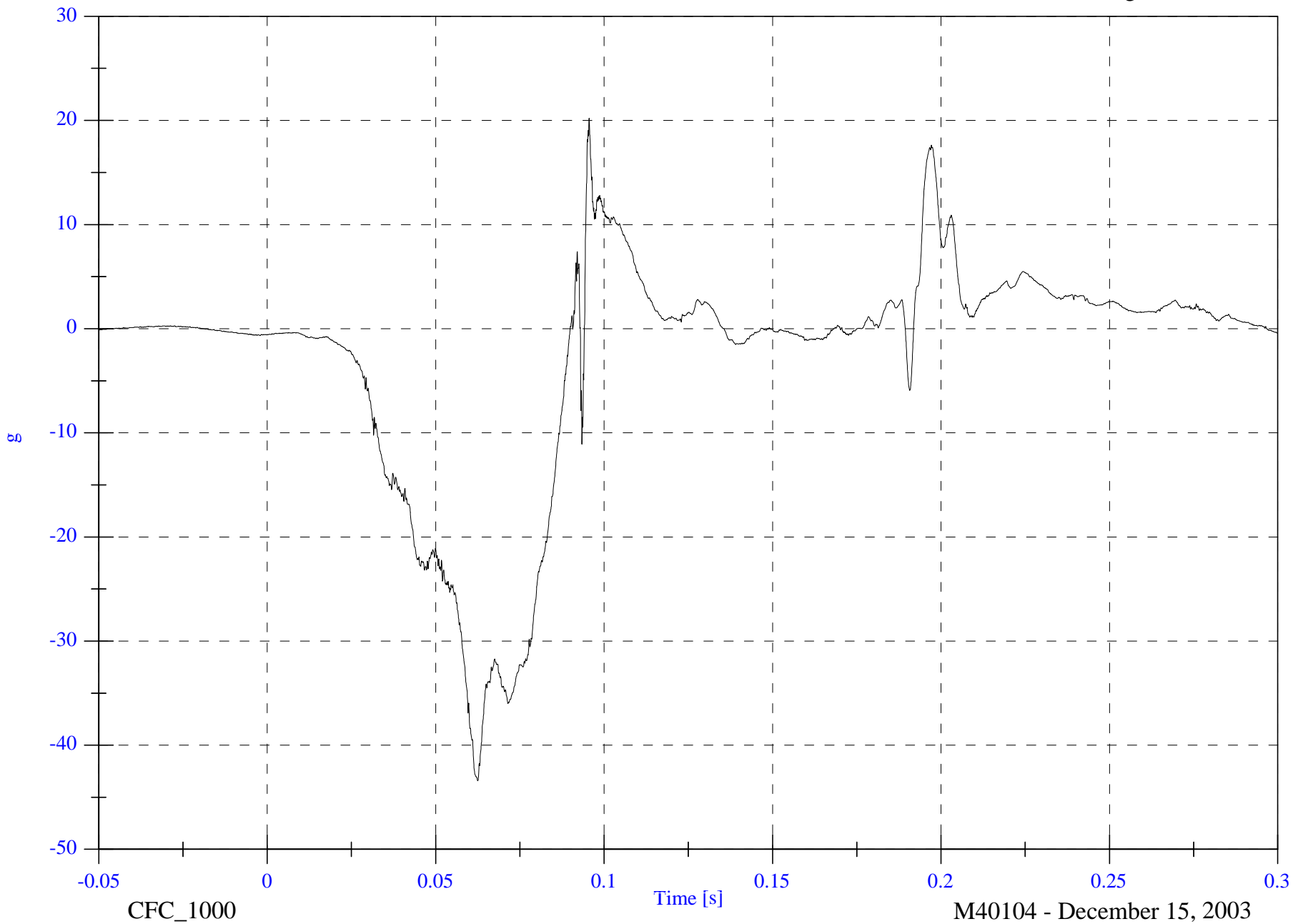
8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 20.2 [g] at 0.096 [s]

Min: -43.4 [g] at 0.062 [s]

V1P3 Pelvic z



4-32

8642-NCAP-37

CFC_1000

Time [s]

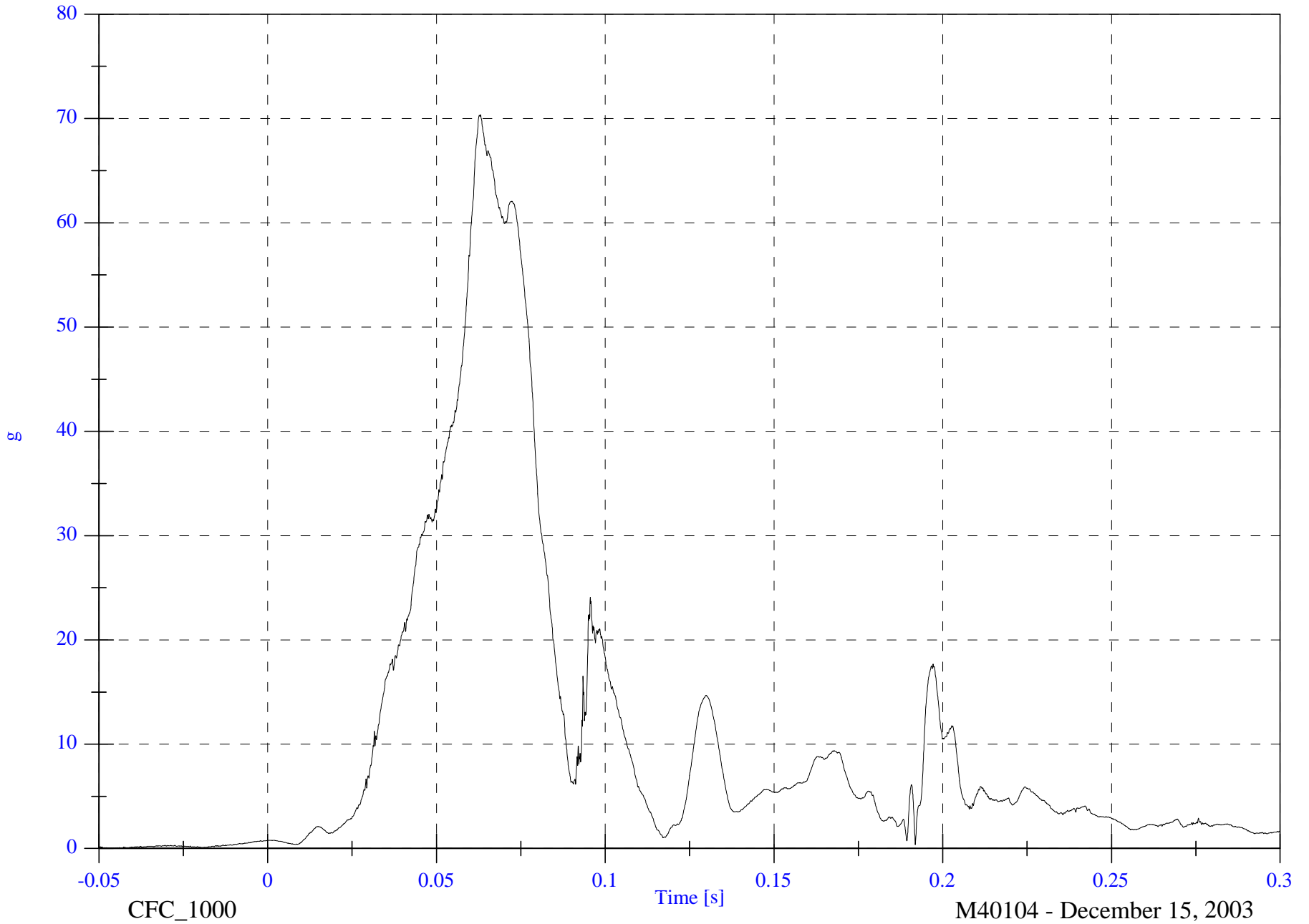
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P3 Pelvic Resultant

Max: 70.4 [g] at 0.063 [s]

Min: 0.0 [g] at -0.047 [s]



4-33

8642-NCAP-37

CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

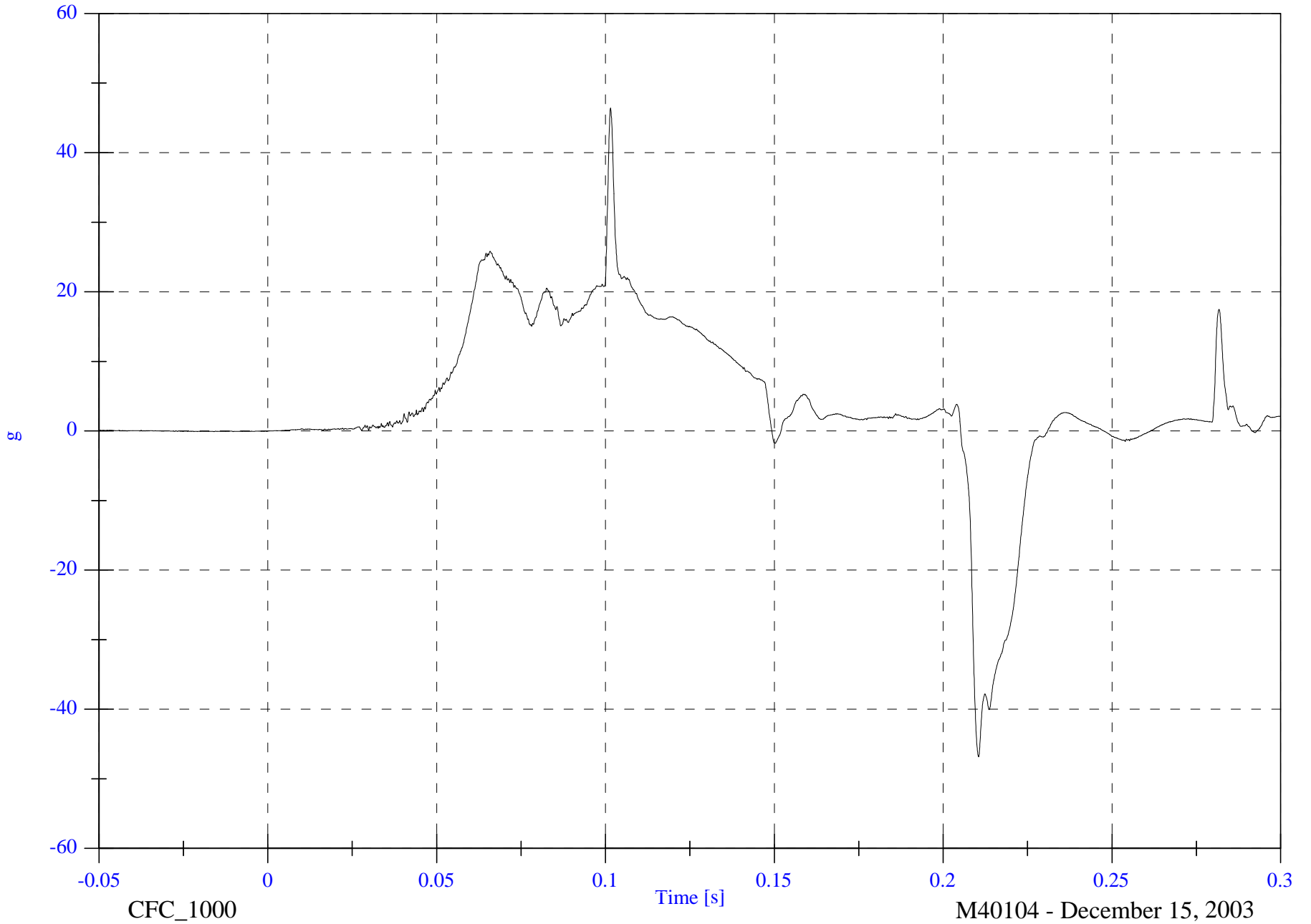
V1P4 Head x

Max: 46.4 [g] at 0.101 [s]

Min: -46.8 [g] at 0.211 [s]

4-34

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Head y

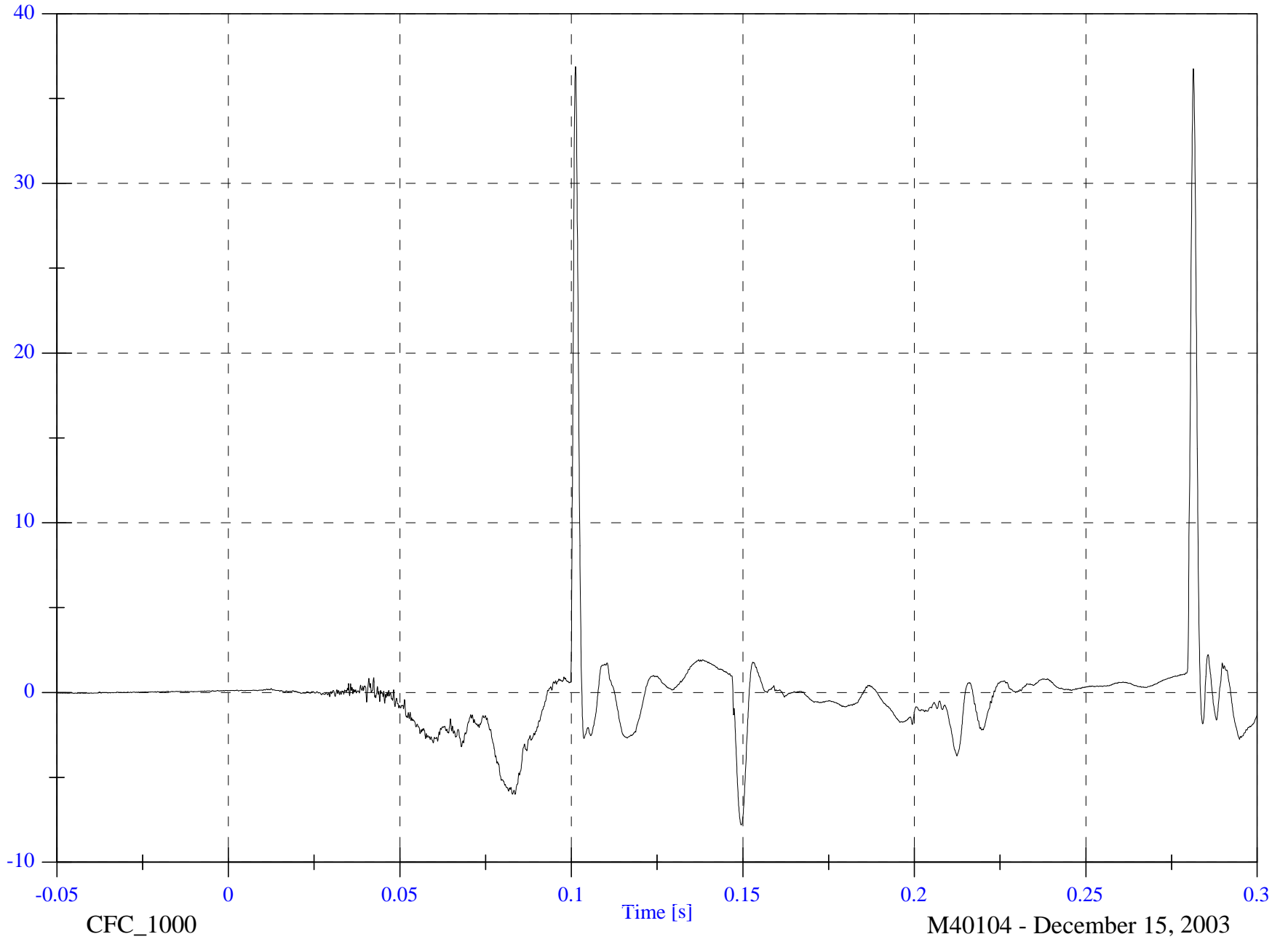
Max: 36.9 [g] at 0.101 [s]

Min: -7.8 [g] at 0.150 [s]

4-35

g

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

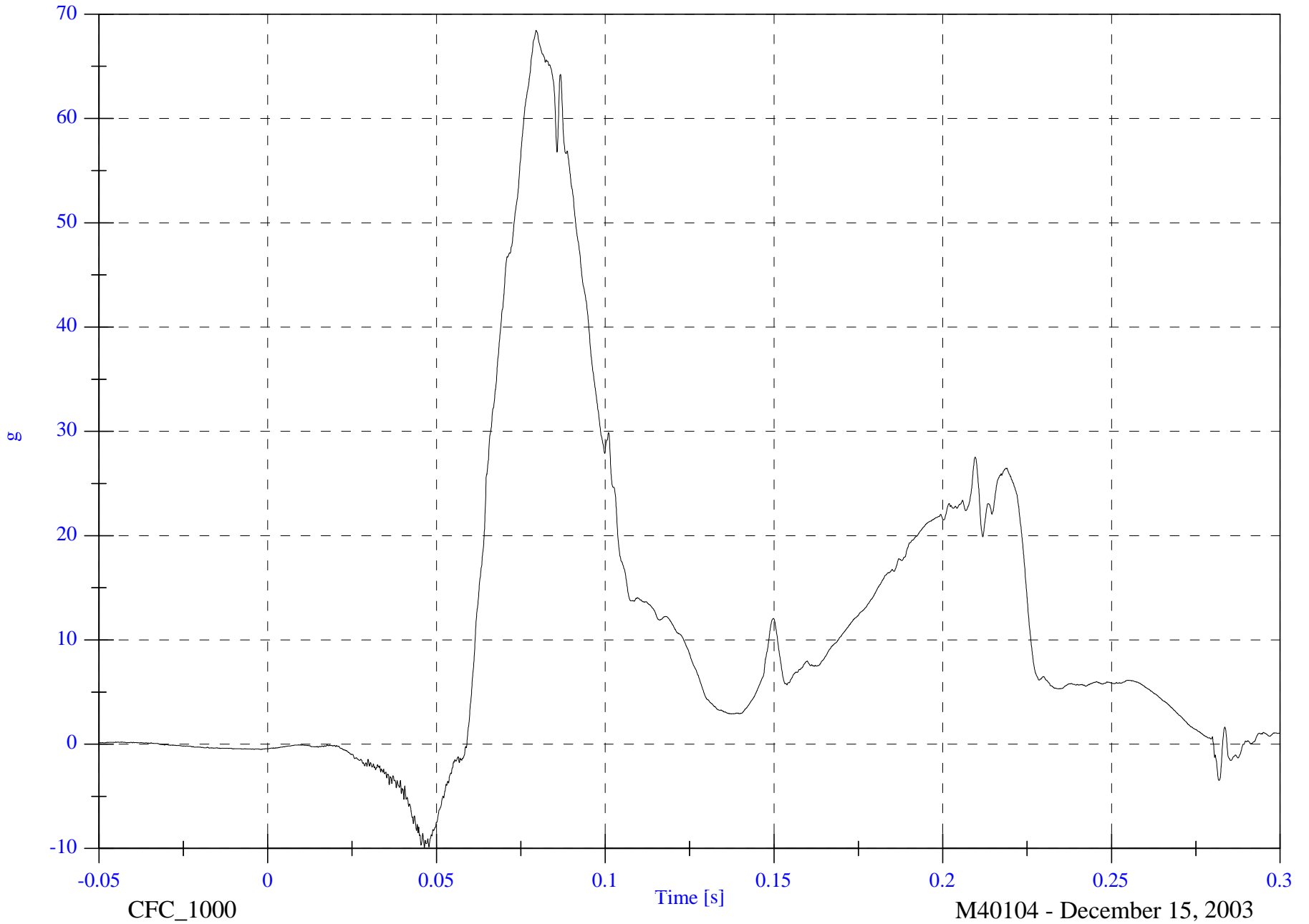
V1P4 Head z

Max: 68.5 [g] at 0.080 [s]

Min: -9.9 [g] at 0.046 [s]

4-36

8642-NCAP-37



CFC_1000

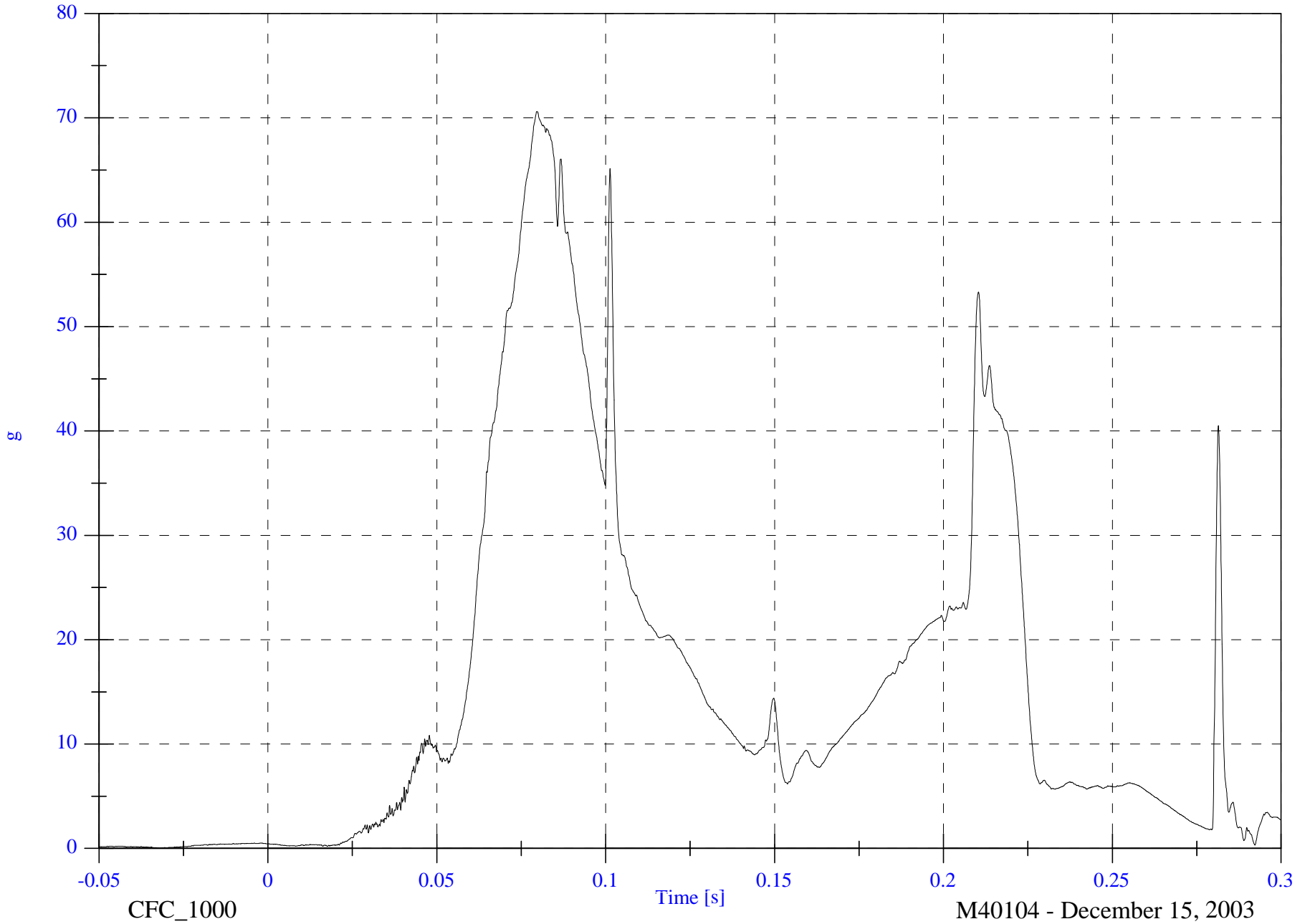
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Head Resultant

Max: 70.6 [g] at 0.080 [s]

Min: 0.0 [g] at -0.032 [s]



4-37

8642-NCAP-37

CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

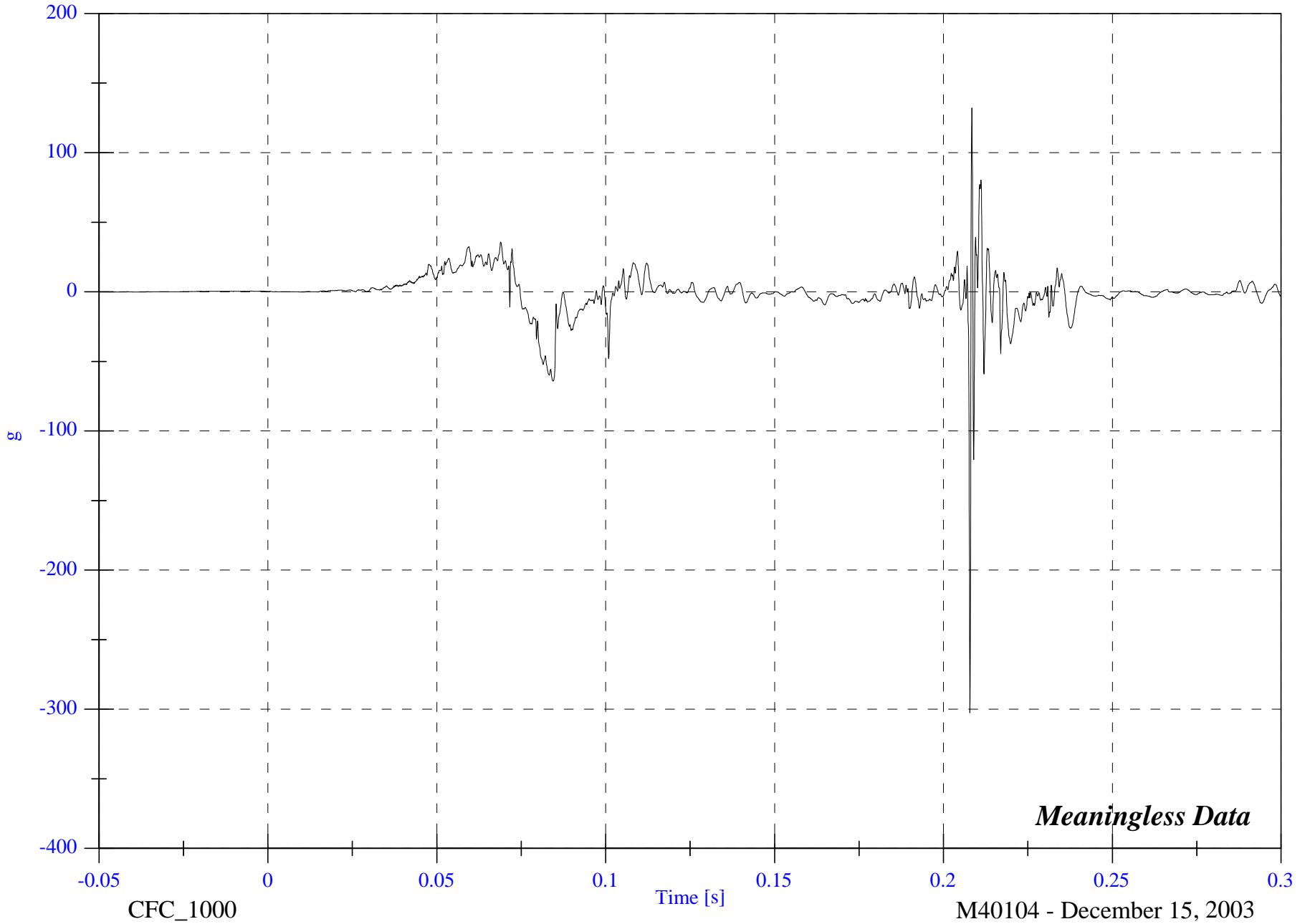
V1P4 Head Red z

Max: 132.0 [g] at 0.208 [s]

Min: -302.6 [g] at 0.208 [s]

4-38

8642-NCAP-37



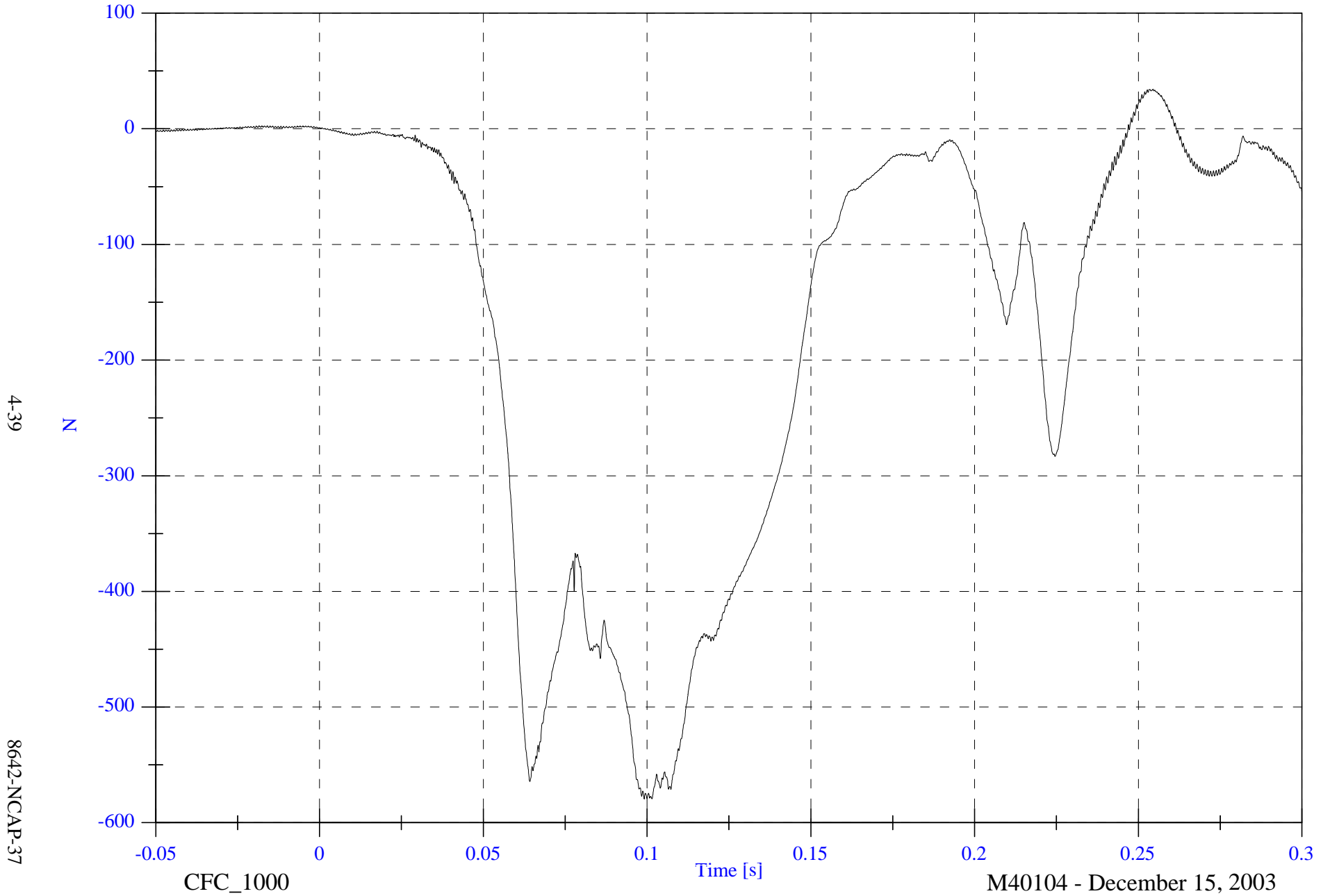
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Upper Neck Fx

Max: 34.2 [N] at 0.254 [s]

Min: -579.5 [N] at 0.099 [s]



4-39

8642-NCAP-37

CFC_1000

Time [s]

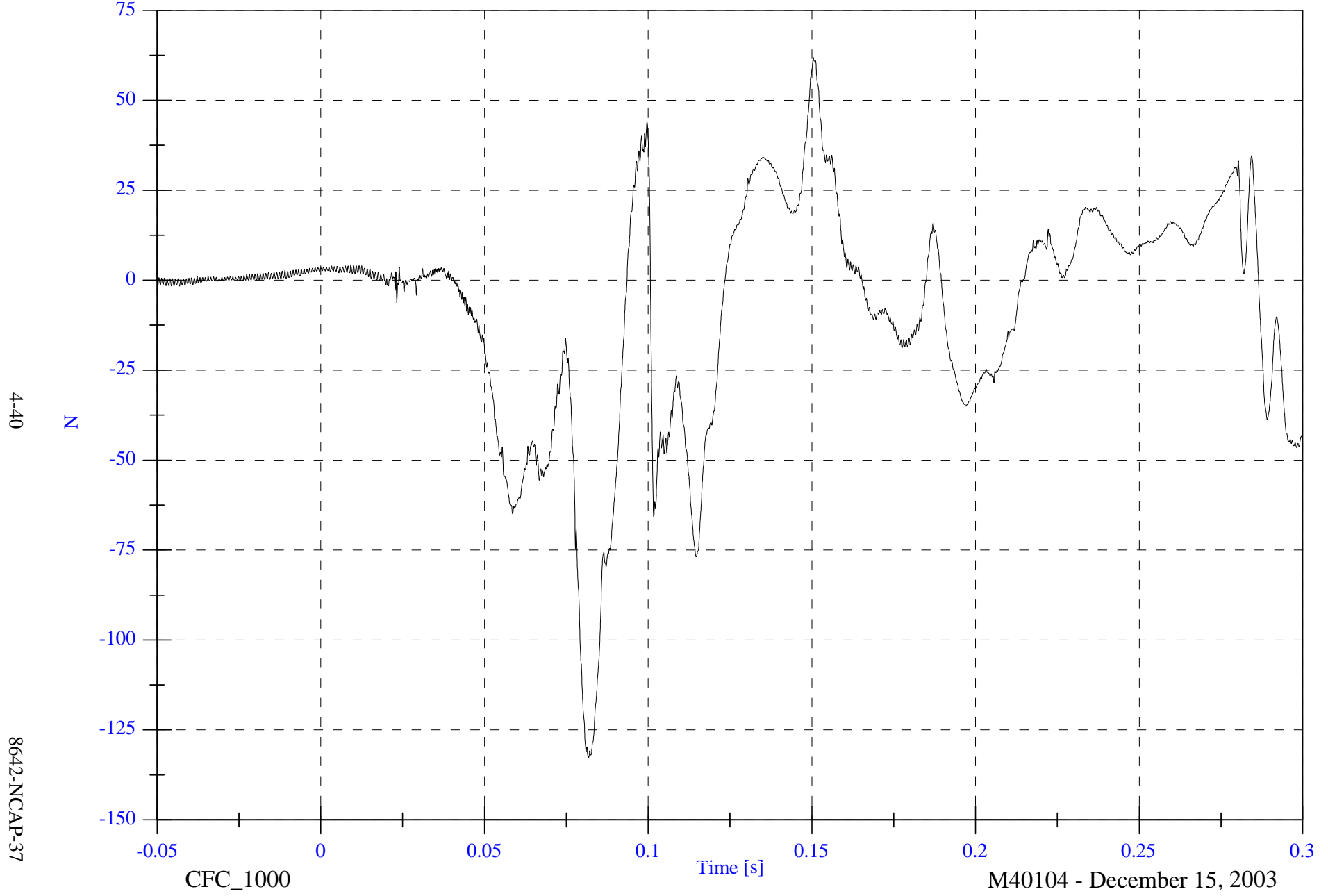
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 61.9 [N] at 0.150 [s]

Min: -132.6 [N] at 0.082 [s]

V1P4 Upper Neck Fy



4-40

8642-NCAP-37

CFC_1000

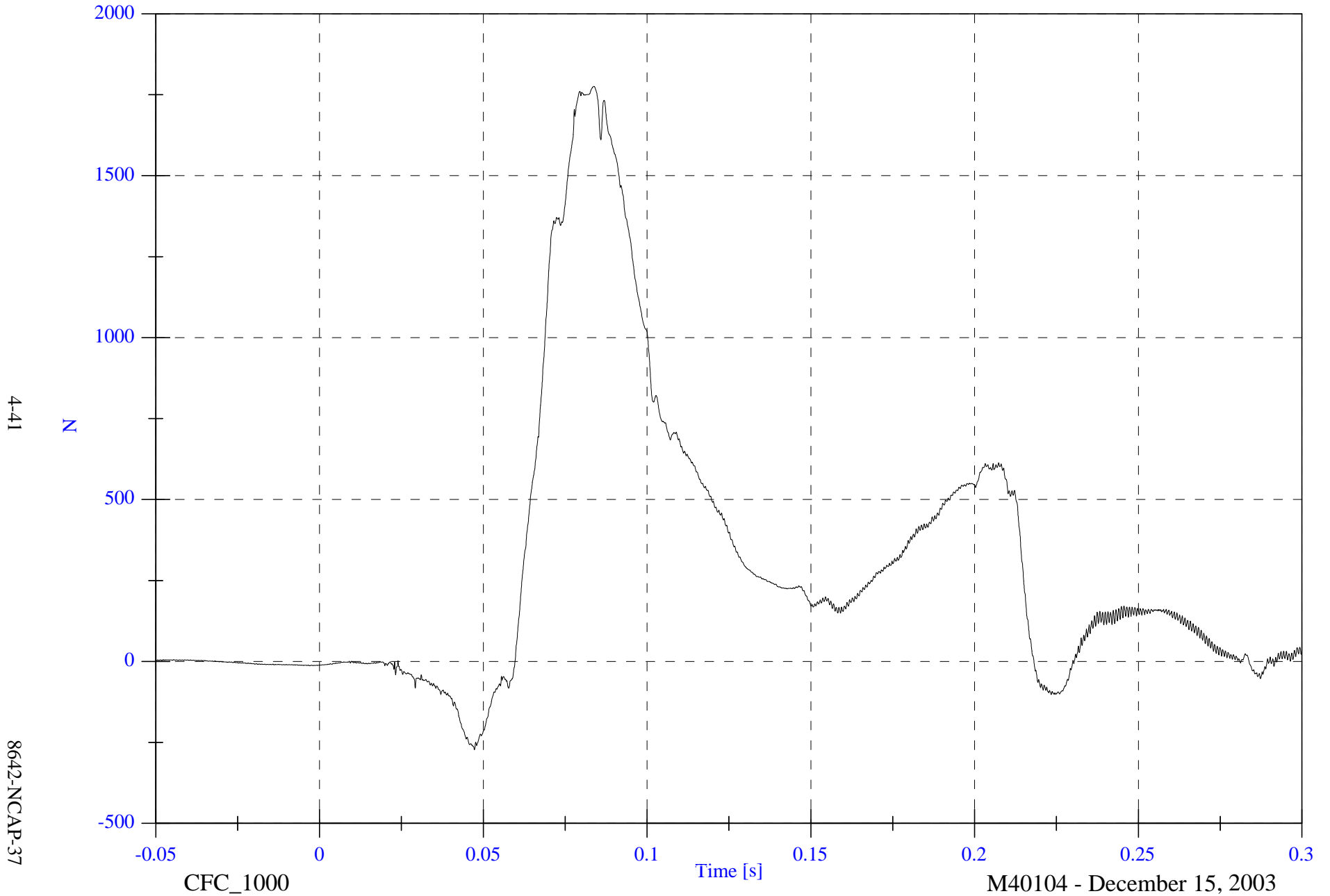
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1776.0 [N] at 0.084 [s]

Min: -272.2 [N] at 0.047 [s]

V1P4 Upper Neck Fz



4-41

8642-NCAP-37

CFC_1000

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

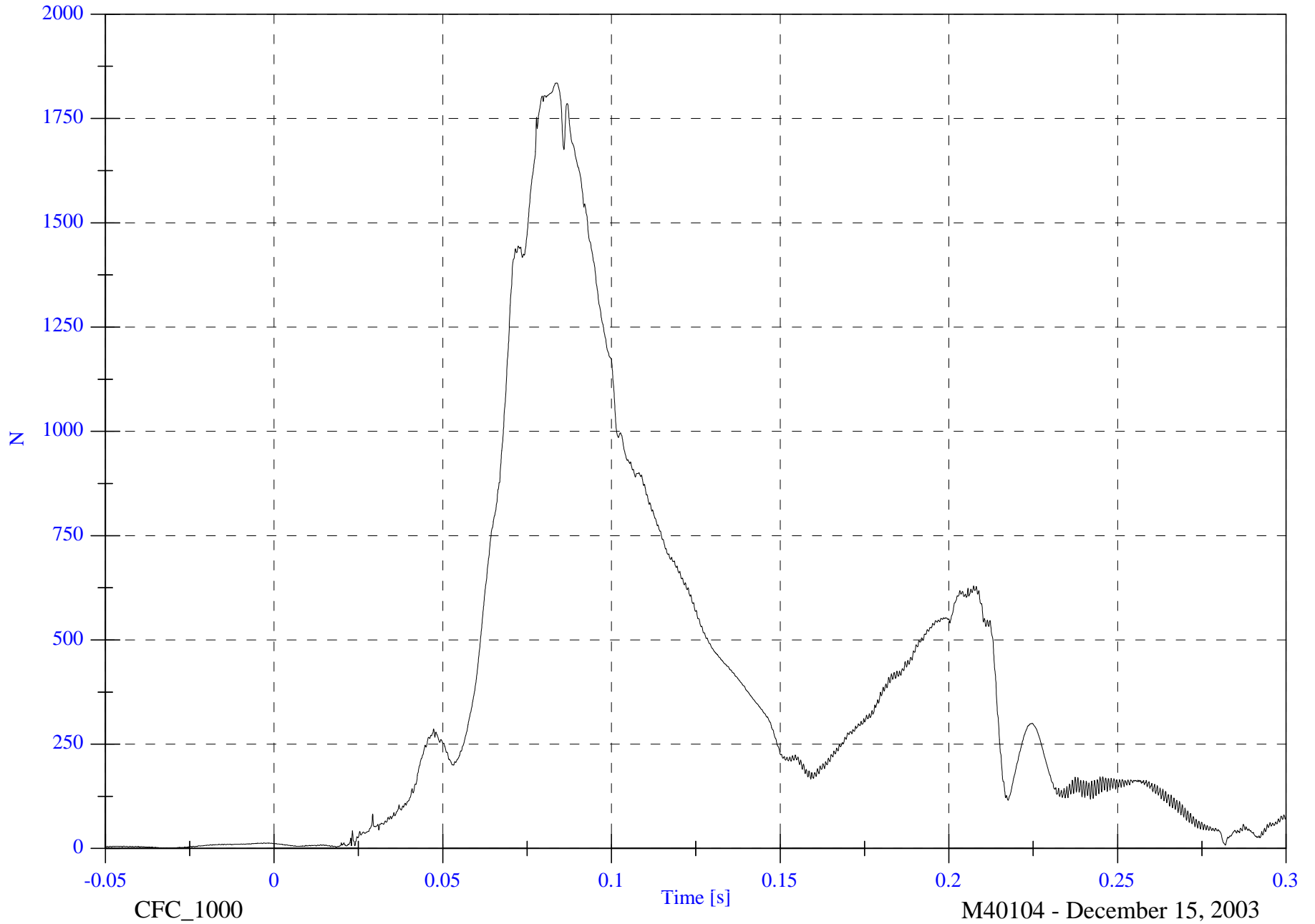
Max: 1835.3 [N] at 0.084 [s]

V1P4 Upper Neck F Resultant

Min: 0.1 [N] at -0.031 [s]

4-42

8642-NCAP-37



CFC_1000

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

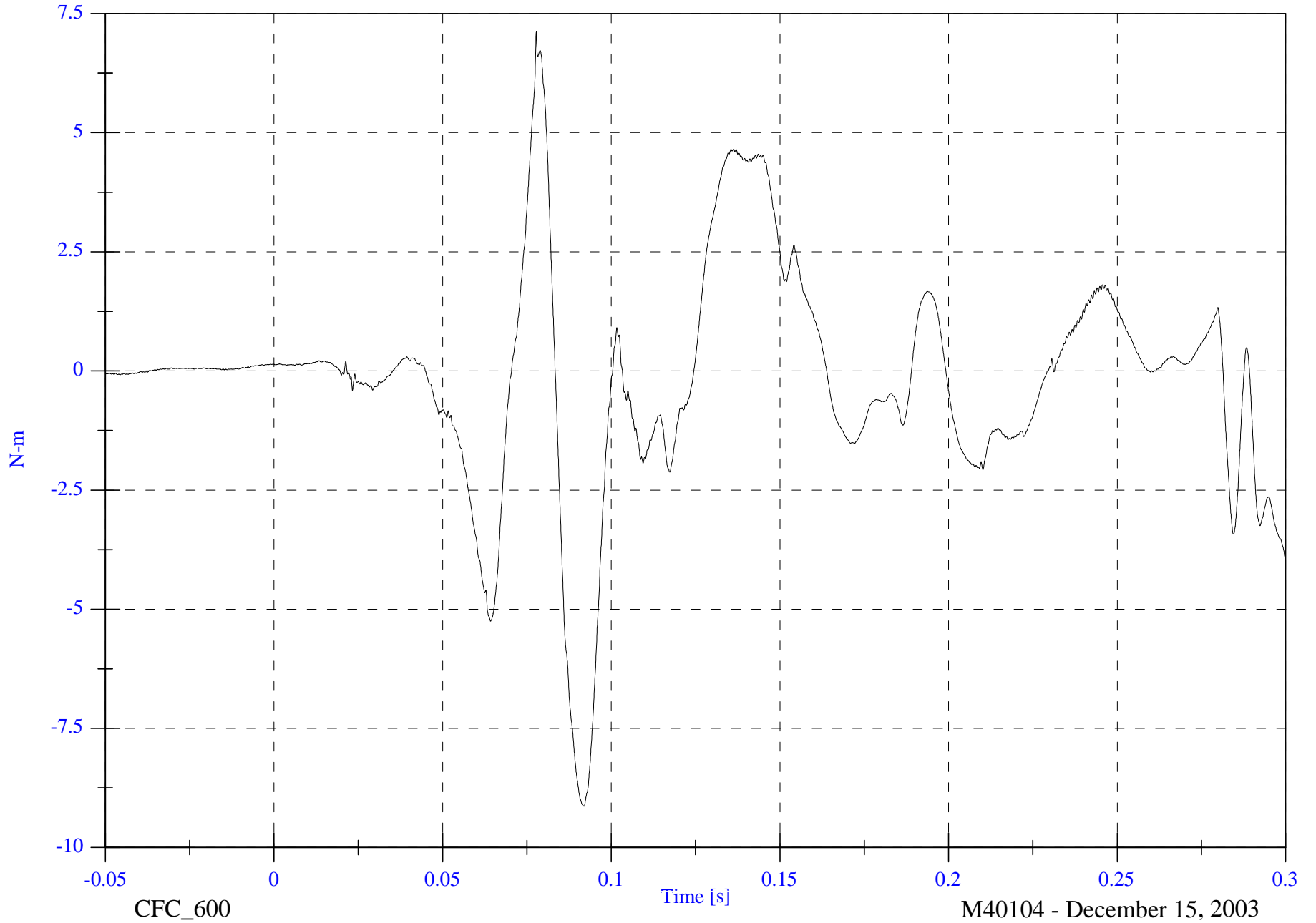
Max: 7.1 [N-m] at 0.078 [s]

V1P4 Upper Neck Mx

Min: -9.1 [N-m] at 0.092 [s]

4-43

8642-NCAP-37



CFC_600

M40104 - December 15, 2003

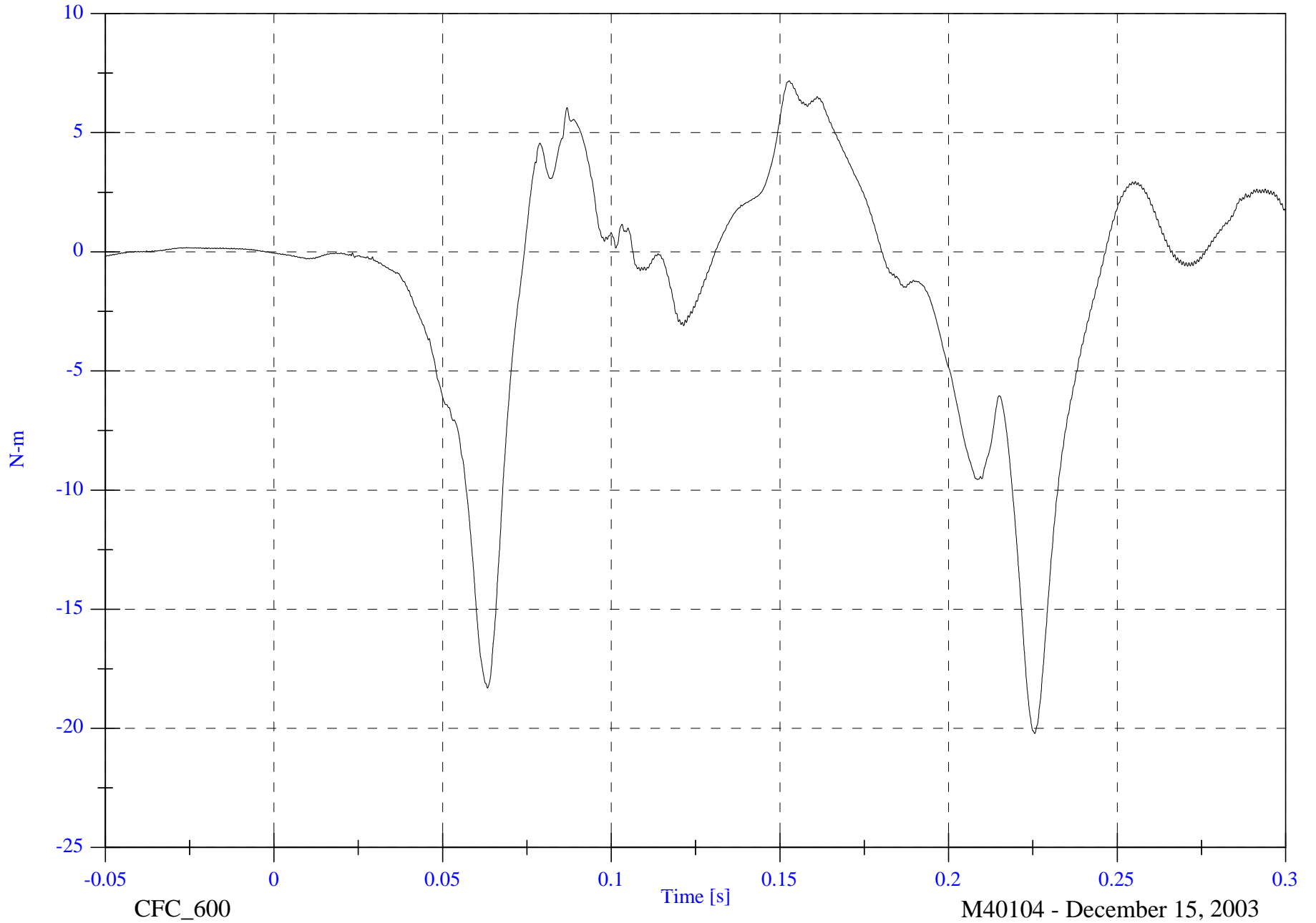
2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Upper Neck My

Max: 7.2 [N-m] at 0.153 [s]
Min: -20.2 [N-m] at 0.226 [s]

4-44

8642-NCAP-37



CFC_600

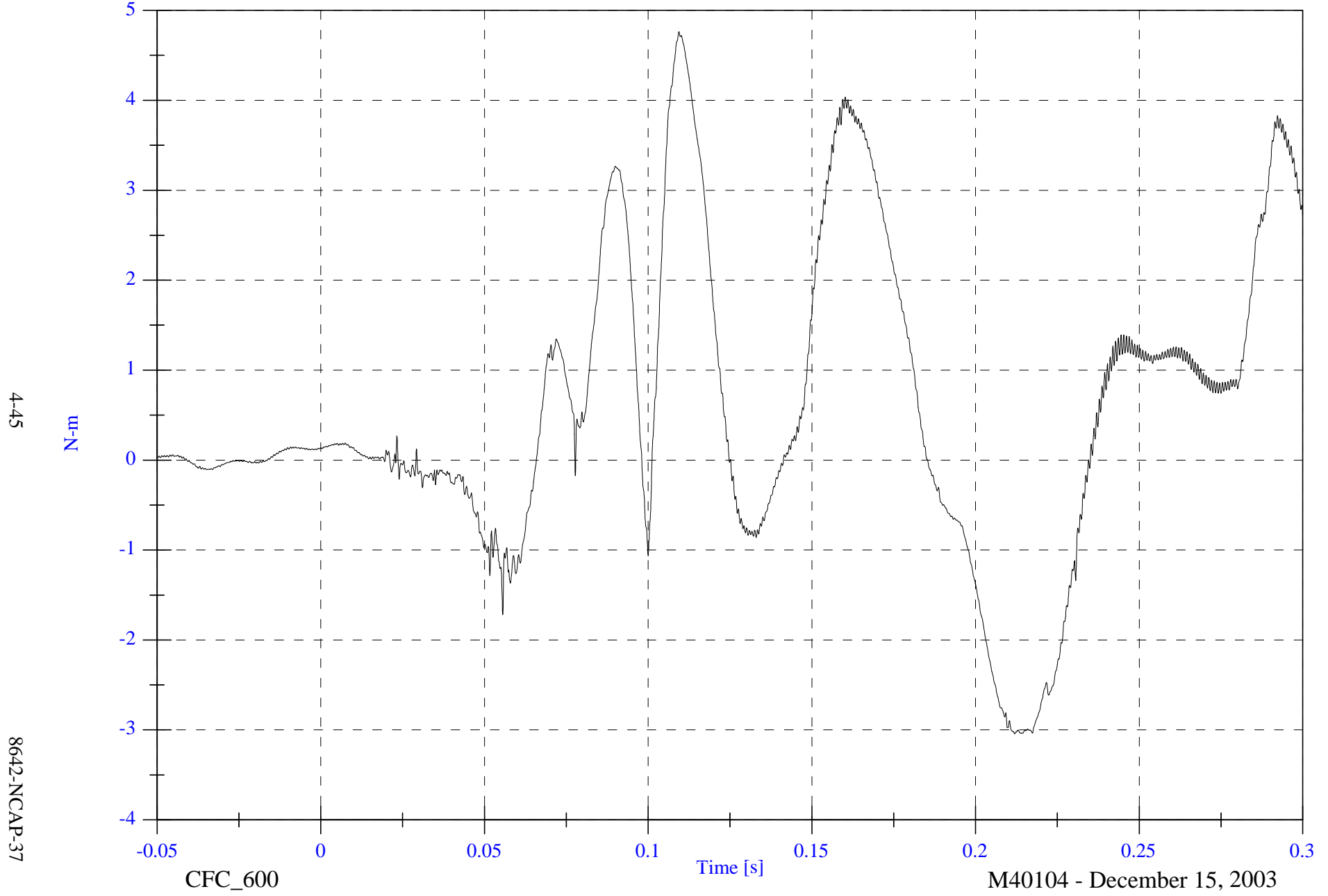
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 4.8 [N-m] at 0.109 [s]

Min: -3.0 [N-m] at 0.212 [s]

V1P4 Upper Neck Mz



4-45

8642-NCAP-37

CFC_600

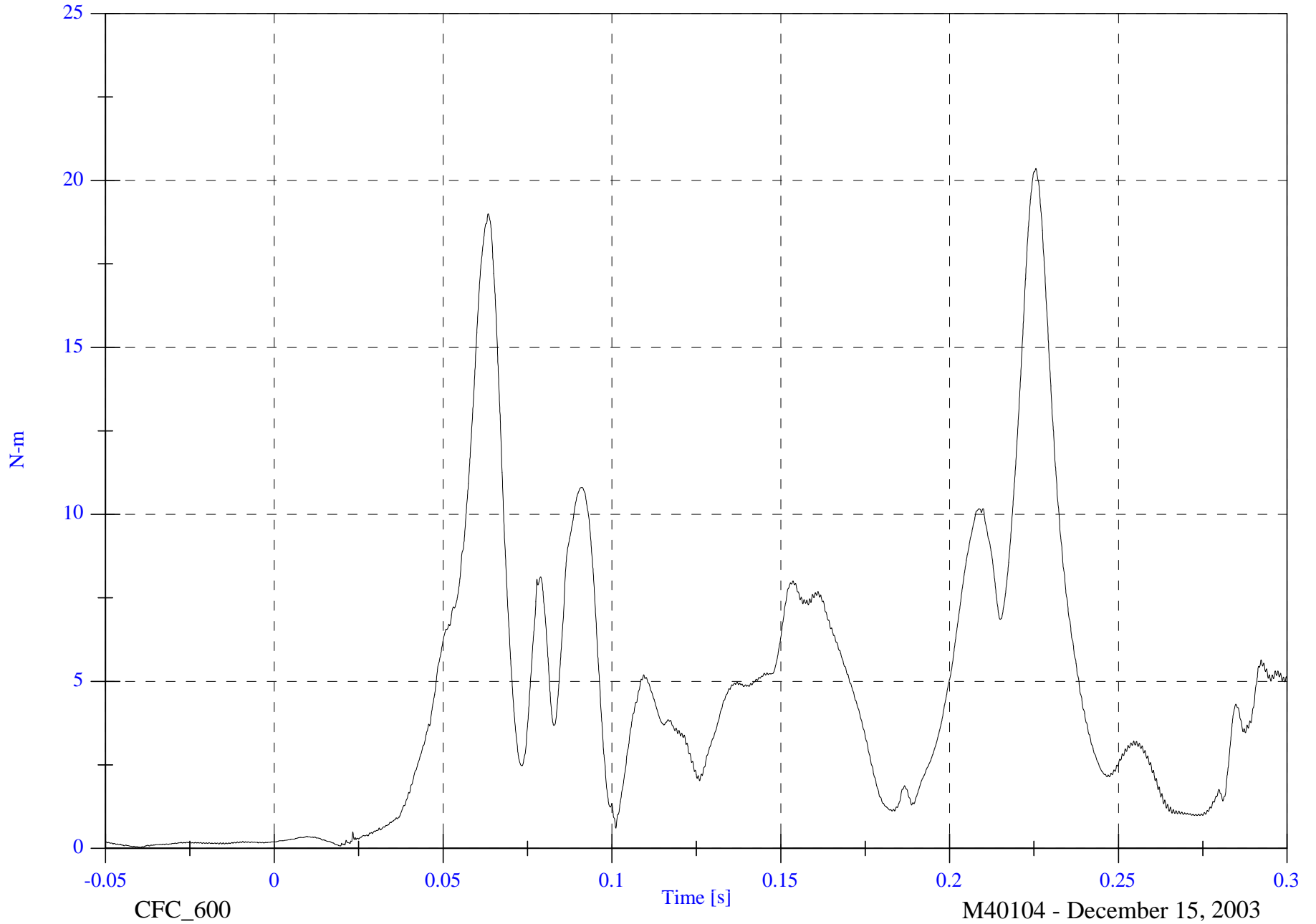
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Upper Neck M Resultant

Max: 20.4 [N-m] at 0.226 [s]

Min: 0.0 [N-m] at -0.040 [s]



4-46

8642-NCAP-37

CFC_600

Time [s]

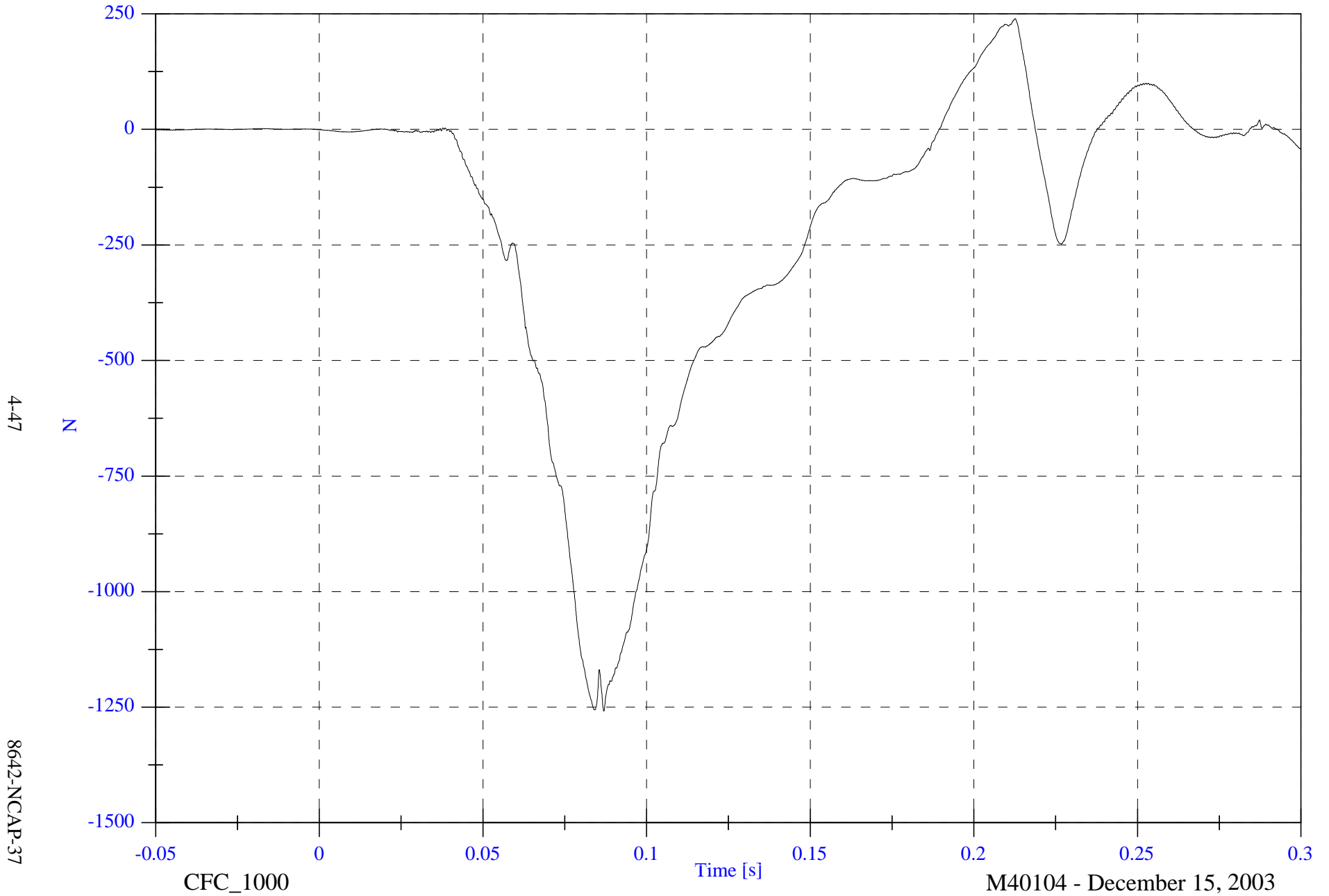
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Lower Neck Fx

Max: 239.2 [N] at 0.213 [s]

Min: -1258.8 [N] at 0.087 [s]



4-47

8642-NCAP-37

CFC_1000

Time [s]

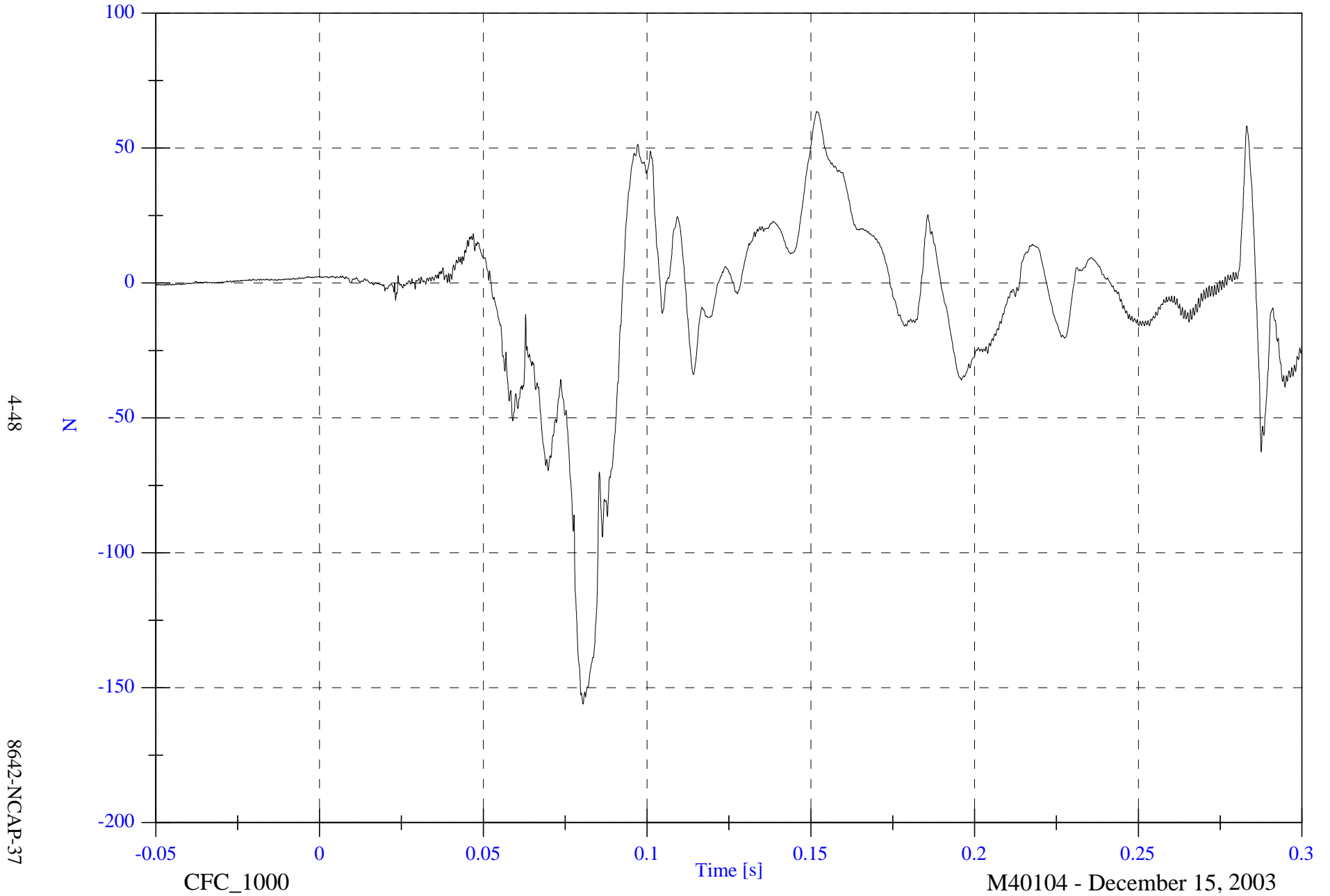
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 63.5 [N] at 0.152 [s]

Min: -156.1 [N] at 0.080 [s]

V1P4 Lower Neck Fy

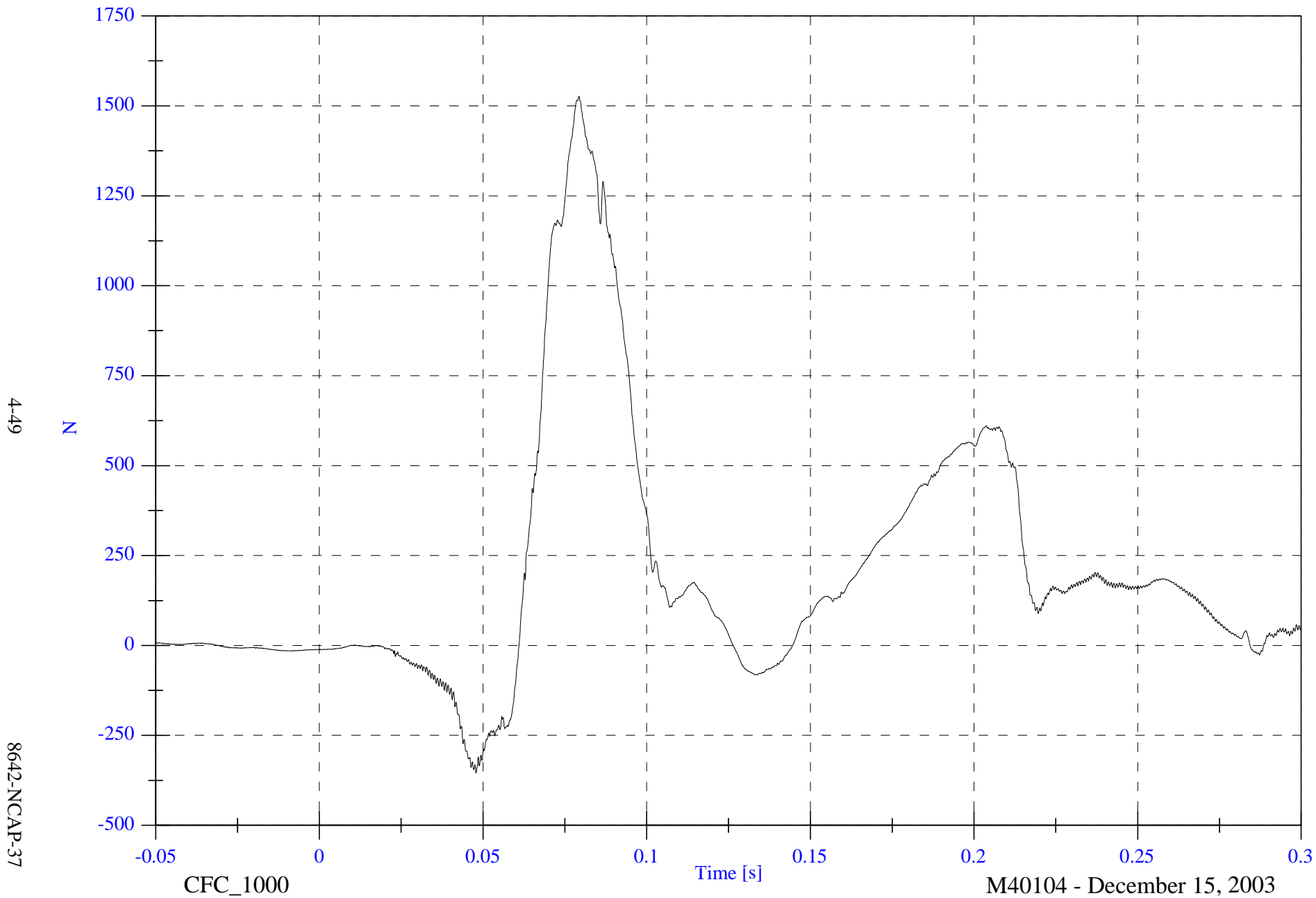


2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1526.2 [N] at 0.079 [s]

Min: -354.8 [N] at 0.048 [s]

V1P4 Lower Neck Fz



4-49

8642-NCAP-37

CFC_1000

Time [s]

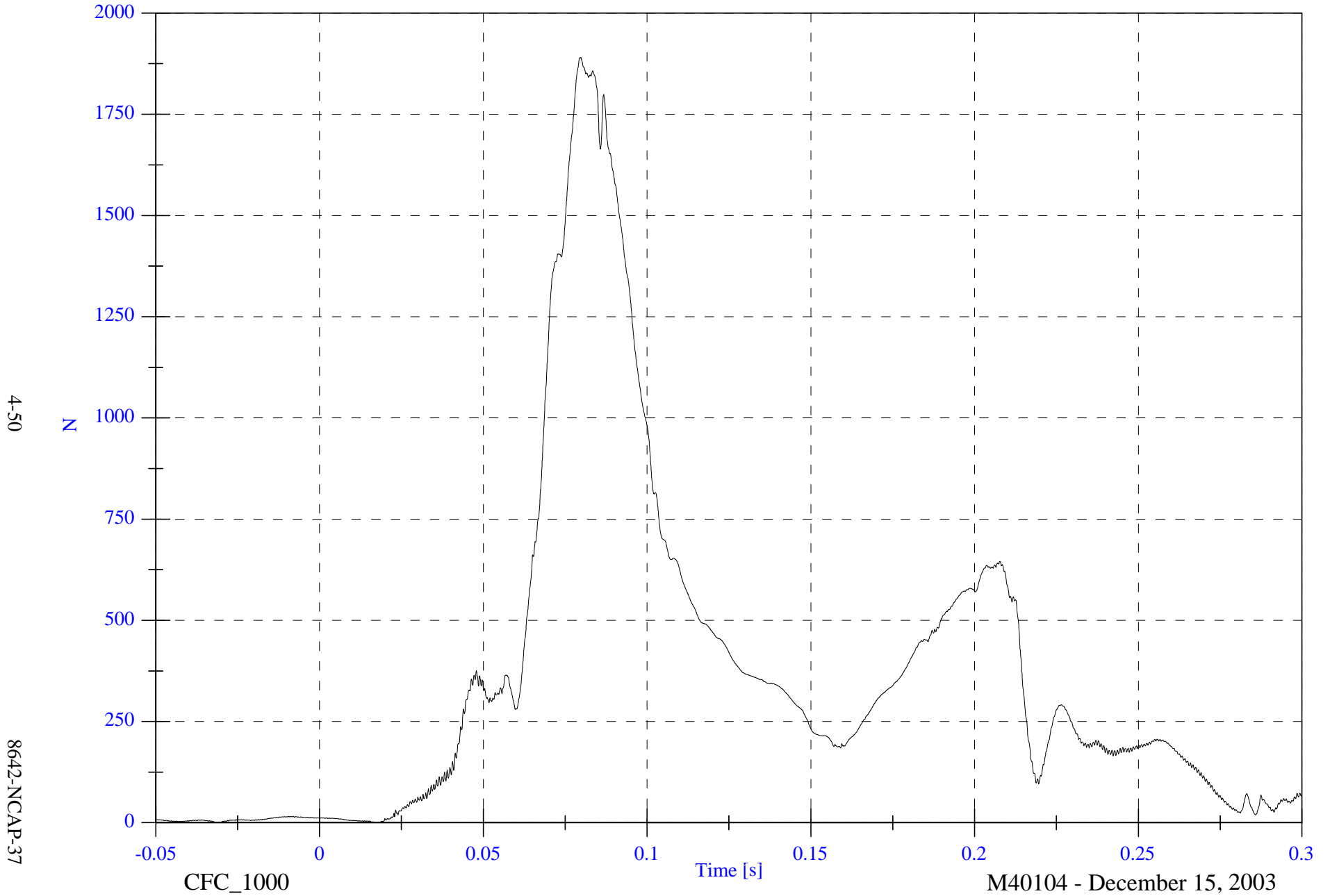
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 1890.6 [N] at 0.080 [s]

V1P4 Lower Neck F Resultant

Min: 0.1 [N] at 0.017 [s]

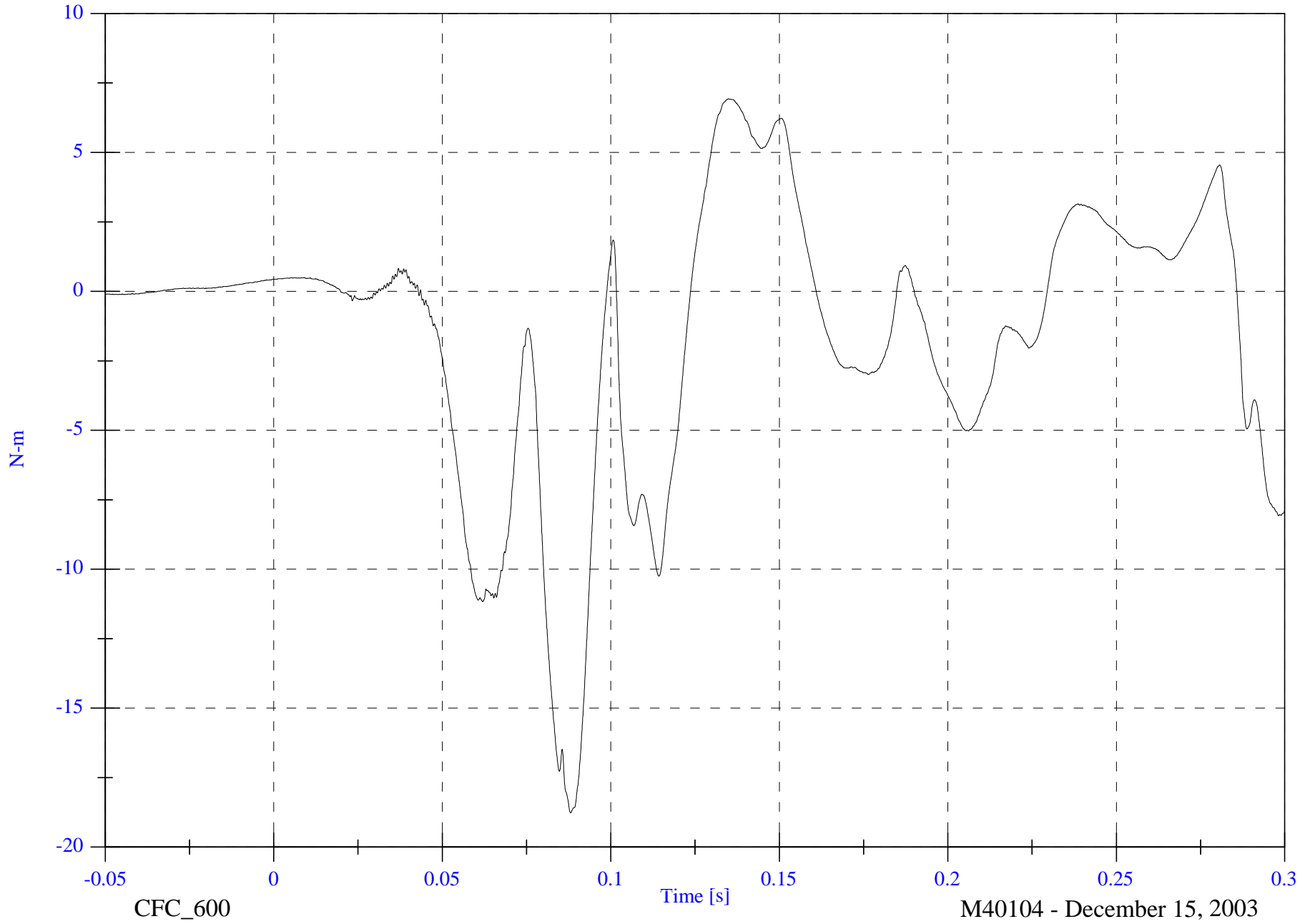


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Lower Neck Mx

Max: 6.9 [N-m] at 0.135 [s]

Min: -18.8 [N-m] at 0.088 [s]



4-51

8642-NCAP-37

CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

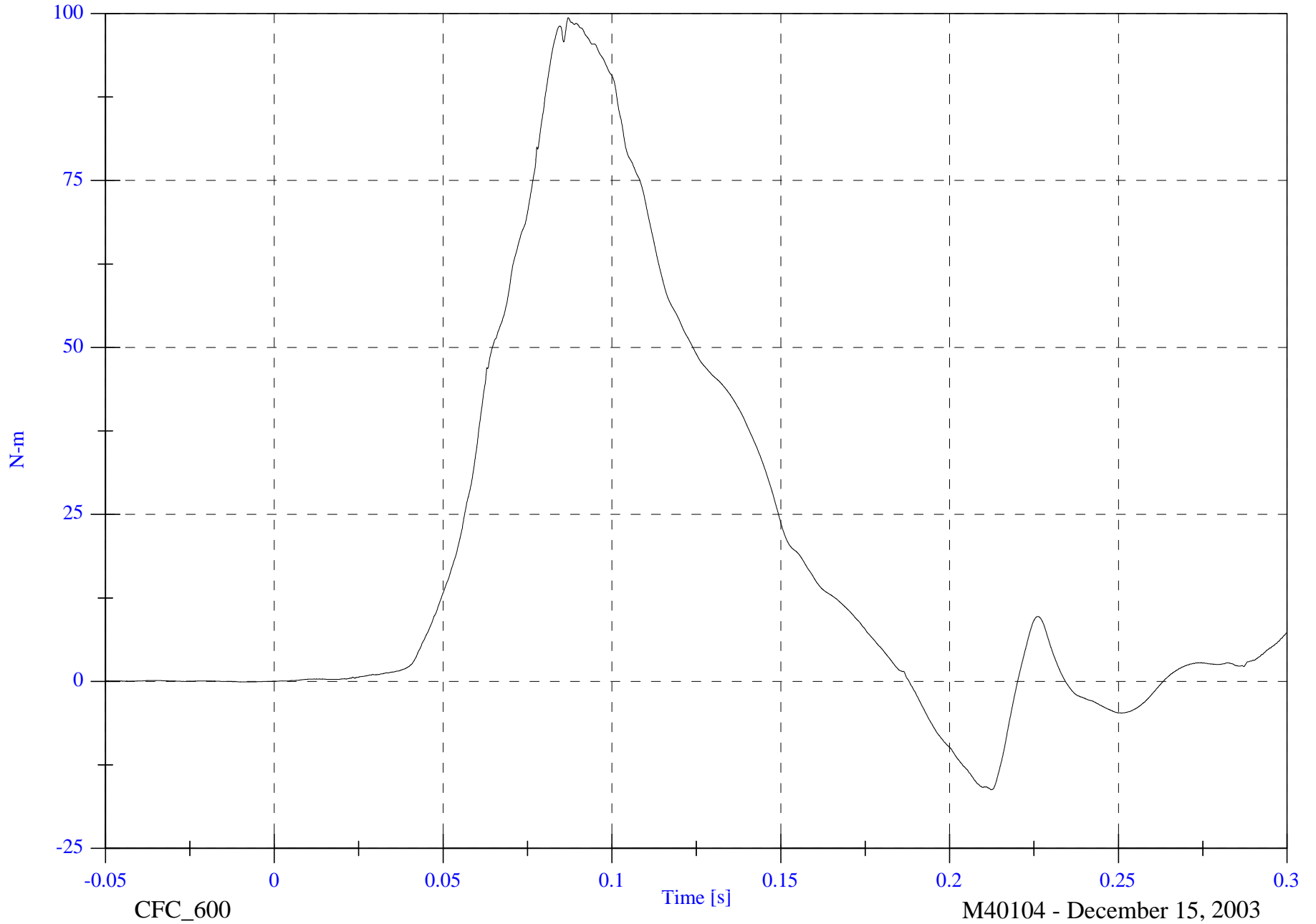
V1P4 Lower Neck My

Max: 99.4 [N-m] at 0.087 [s]

Min: -16.2 [N-m] at 0.212 [s]

4-52

8642-NCAP-37

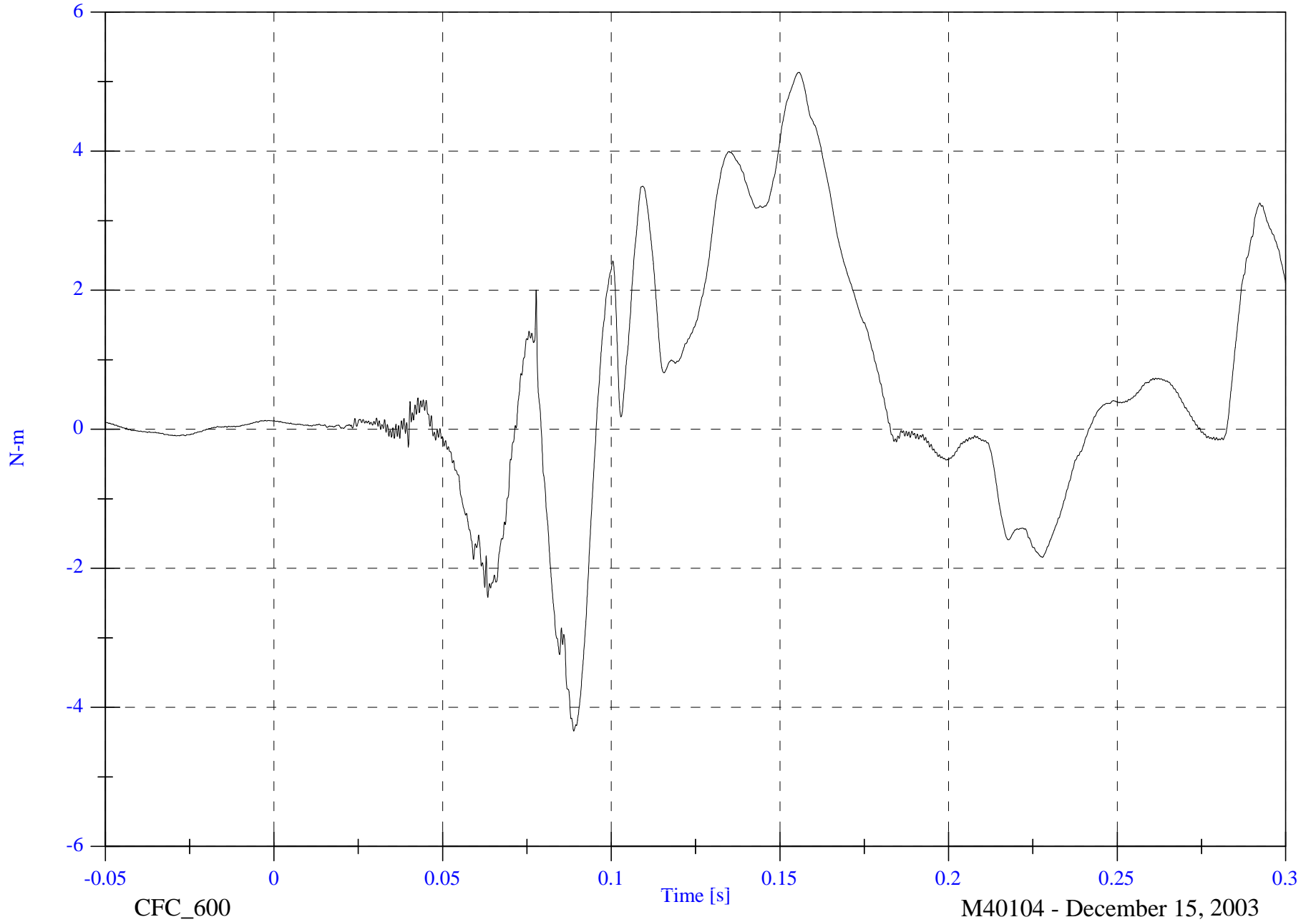


2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Lower Neck Mz

Max: 5.1 [N-m] at 0.156 [s]

Min: -4.3 [N-m] at 0.089 [s]



4-53

8642-NCAP-37

CFC_600

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

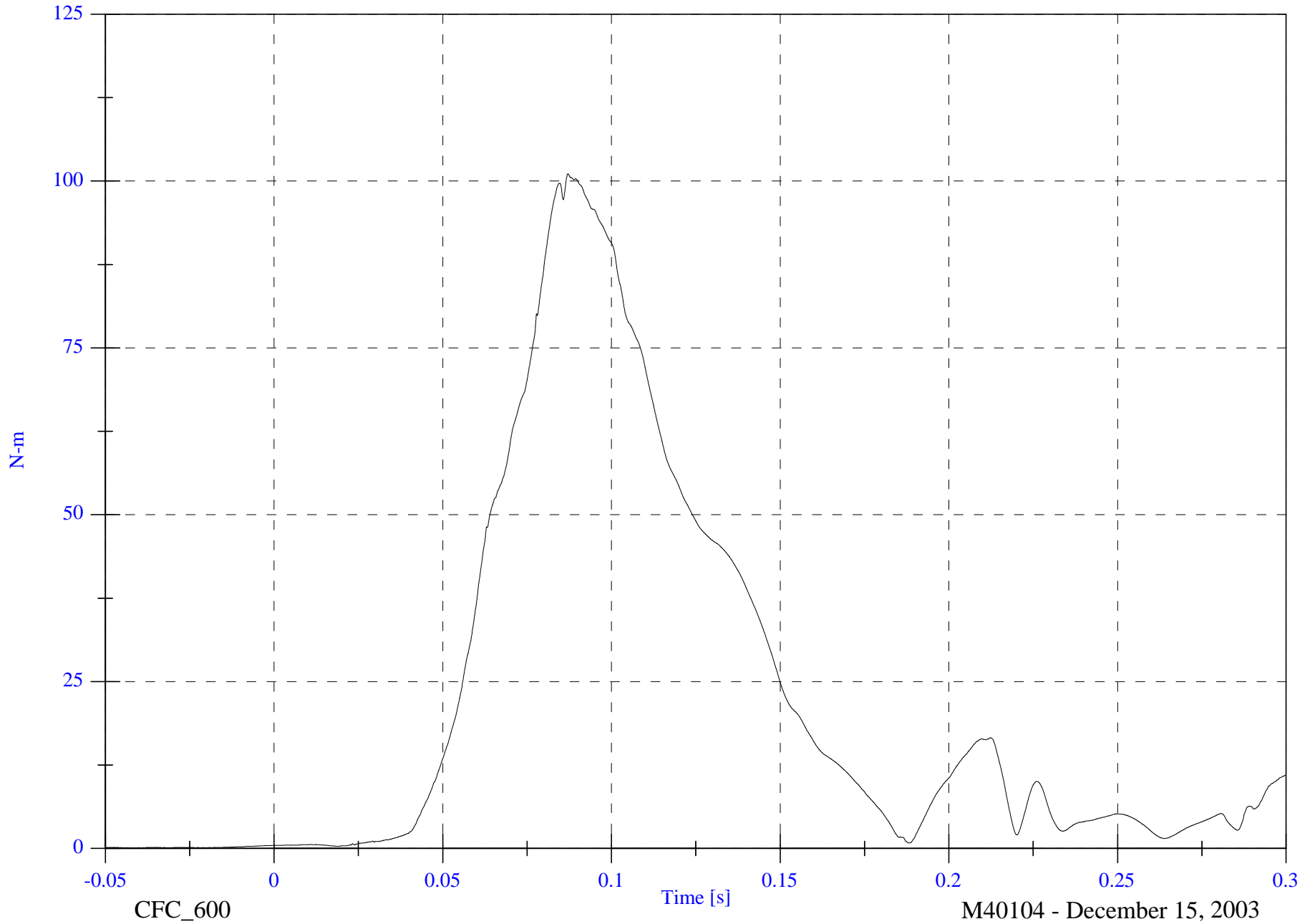
V1P4 Lower Neck M Resultant

Max: 101.1 [N-m] at 0.087 [s]

Min: 0.1 [N-m] at -0.042 [s]

4-54

8642-NCAP-37



CFC_600

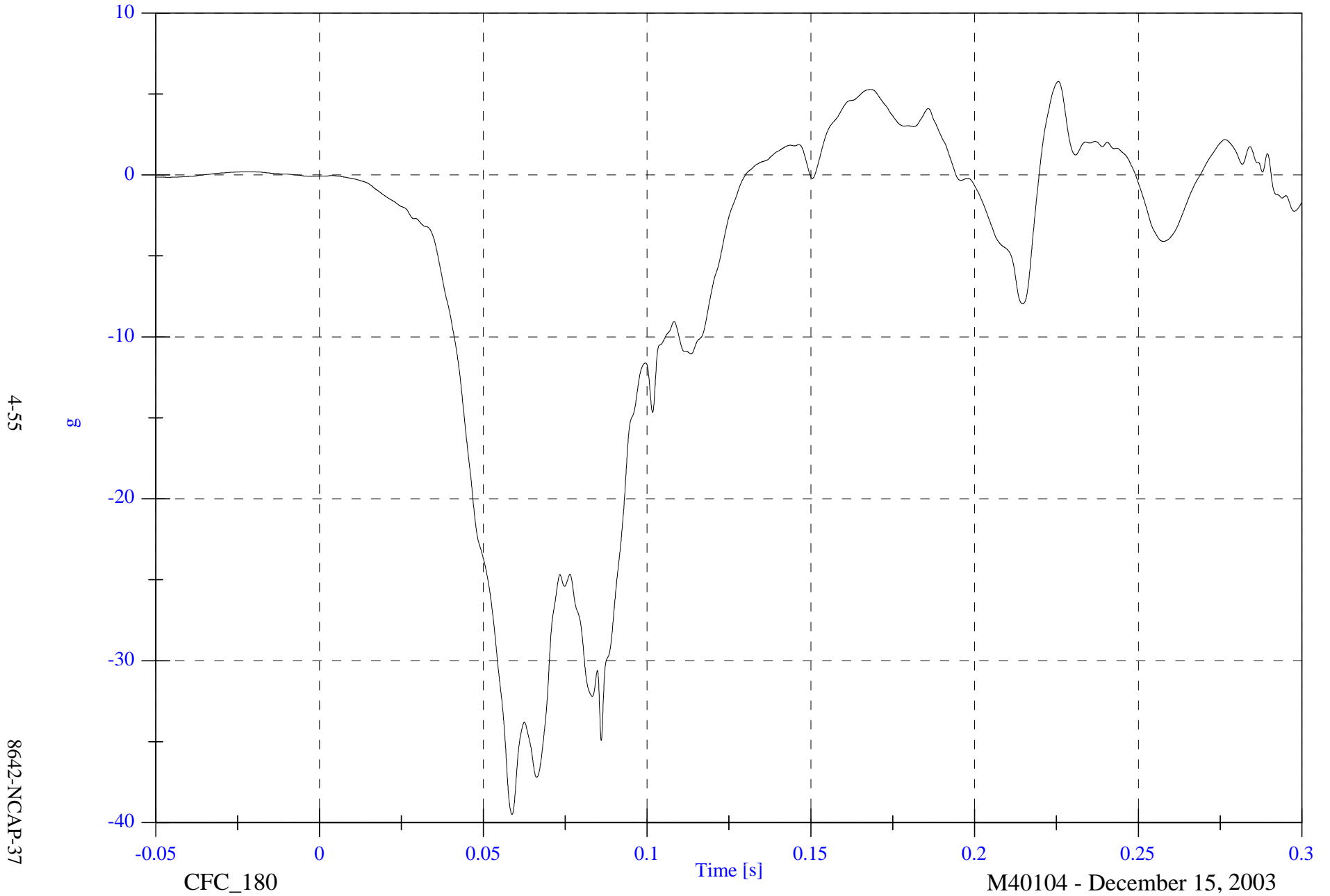
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

VIP4 Chest x

Max: 5.8 [g] at 0.226 [s]

Min: -39.5 [g] at 0.059 [s]

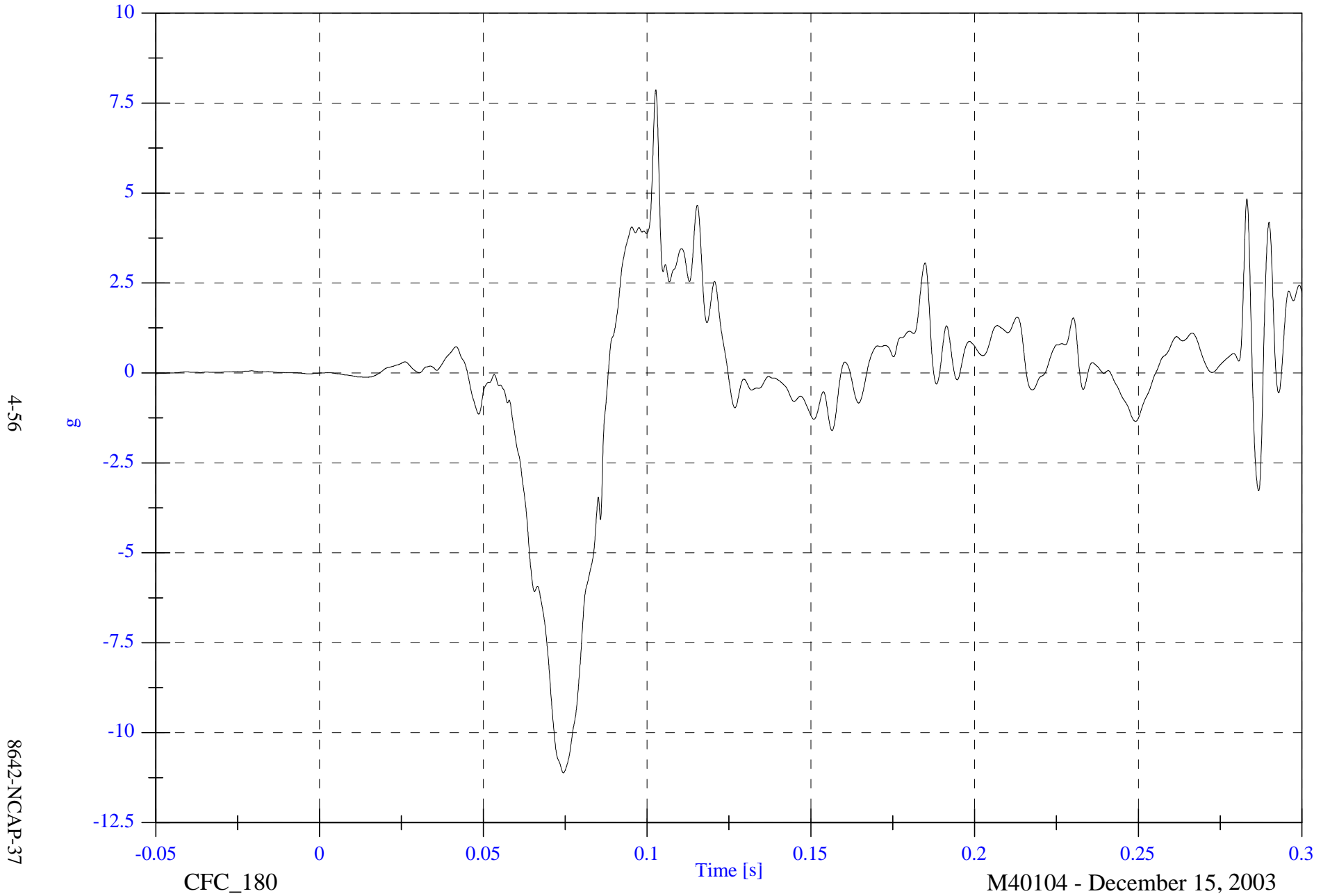


2004 NCAP Test 1 2004 Chevrolet Malibu

VIP4 Chest y

Max: 7.9 [g] at 0.103 [s]

Min: -11.1 [g] at 0.074 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

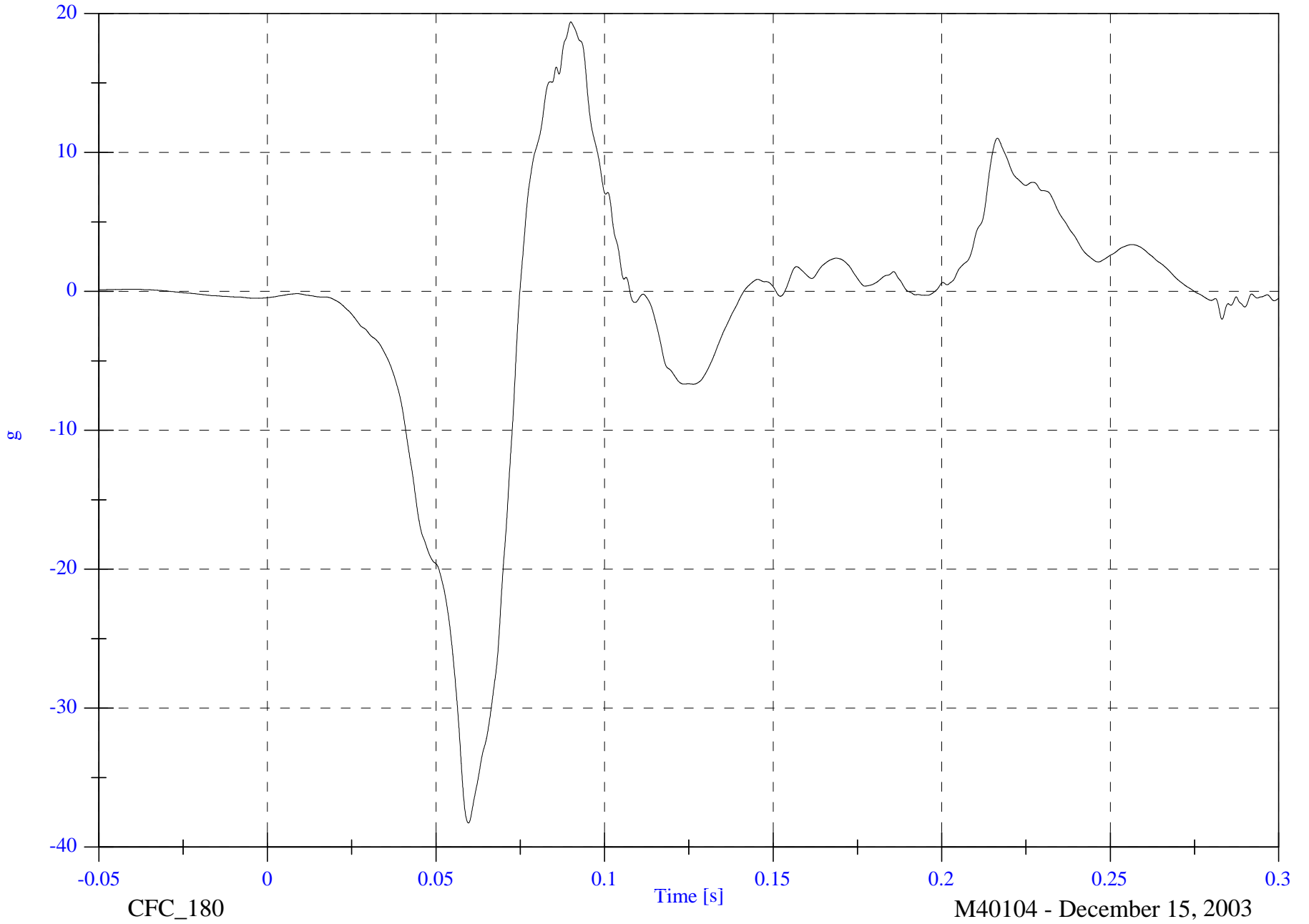
VIP4 Chest z

Max: 19.4 [g] at 0.090 [s]

Min: -38.3 [g] at 0.060 [s]

4-57

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Chest Resultant

Max: 54.7 [g] at 0.059 [s]

Min: 0.1 [g] at -0.033 [s]

4-58

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

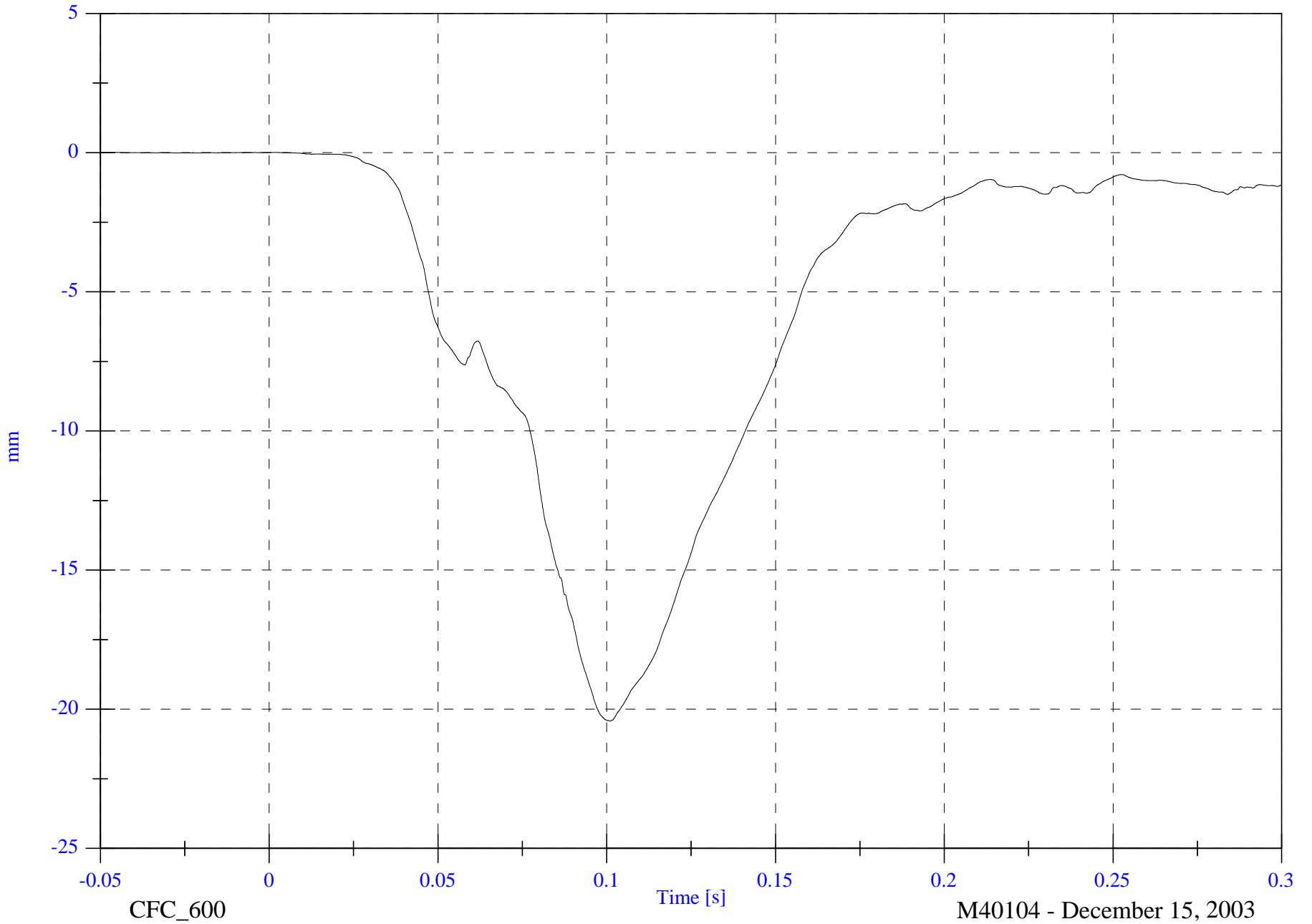
V1P4 Chest Compression

Max: 0.0 [mm] at -0.049 [s]

Min: -20.4 [mm] at 0.101 [s]

4-59

8642-NCAP-37



CFC_600

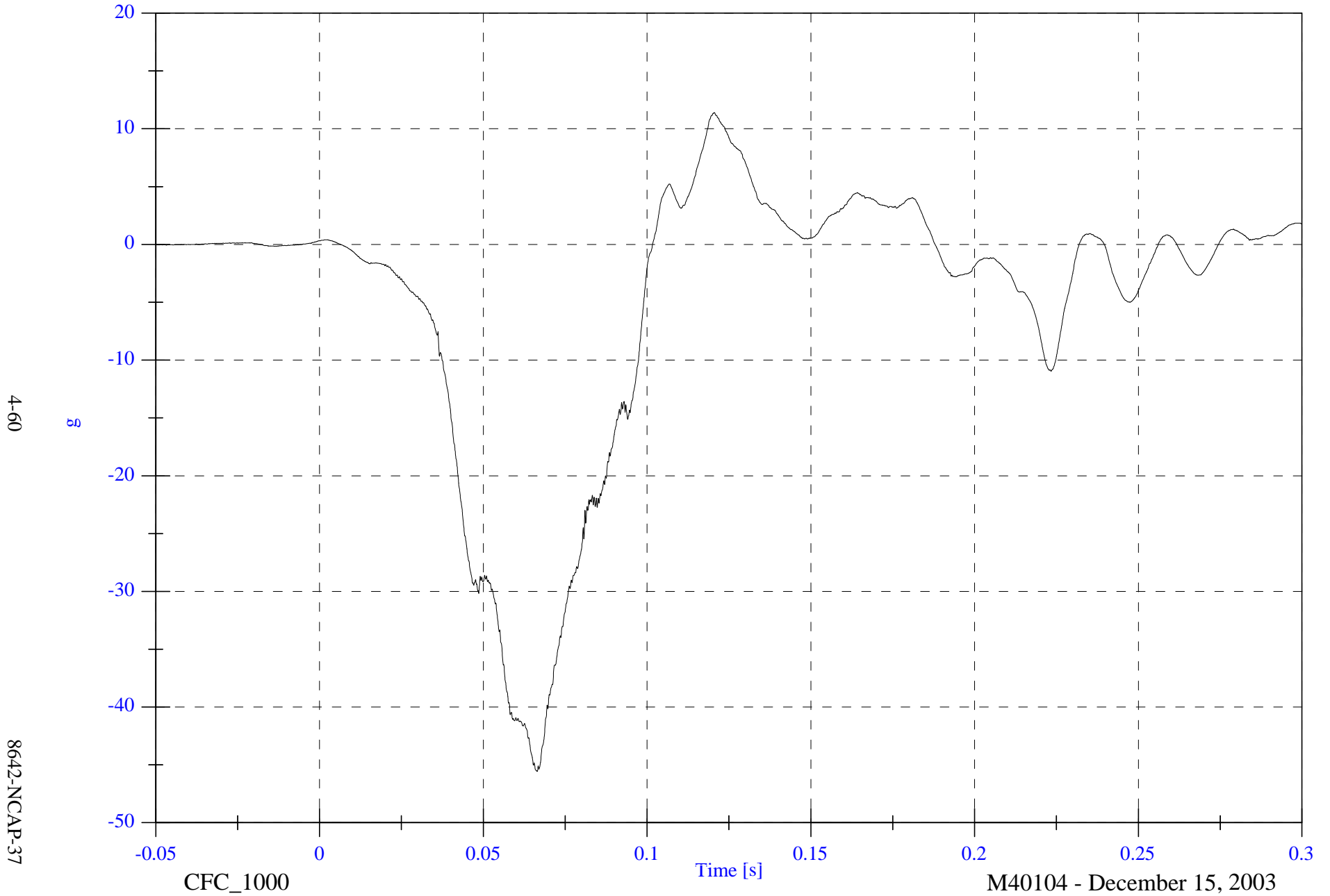
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1P4 Pelvic x

Max: 11.4 [g] at 0.121 [s]

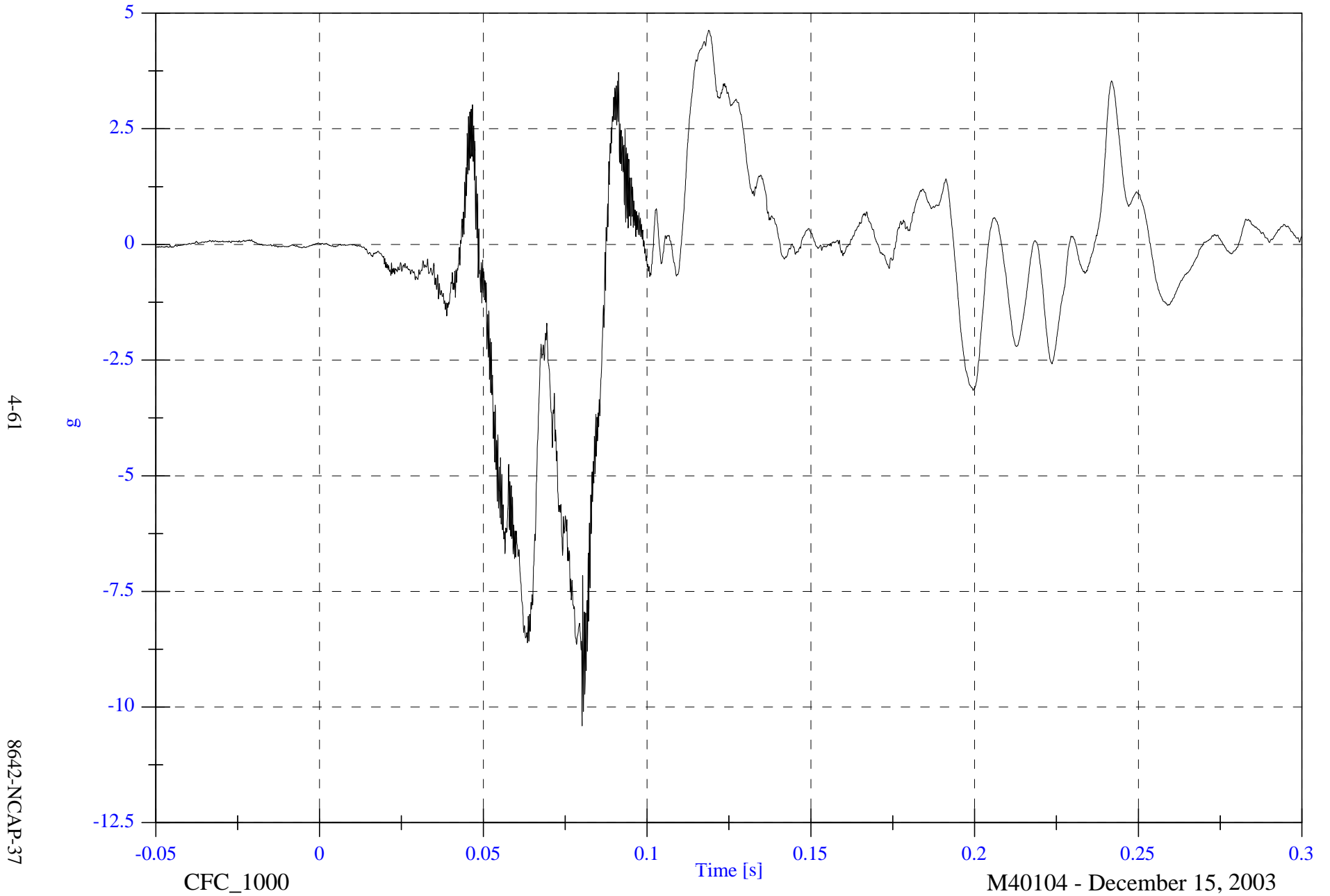
Min: -45.6 [g] at 0.067 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 4.6 [g] at 0.119 [s]
Min: -10.4 [g] at 0.080 [s]

V1P4 Pelvic y



2004 NCAP Test 1 2004 Chevrolet Malibu

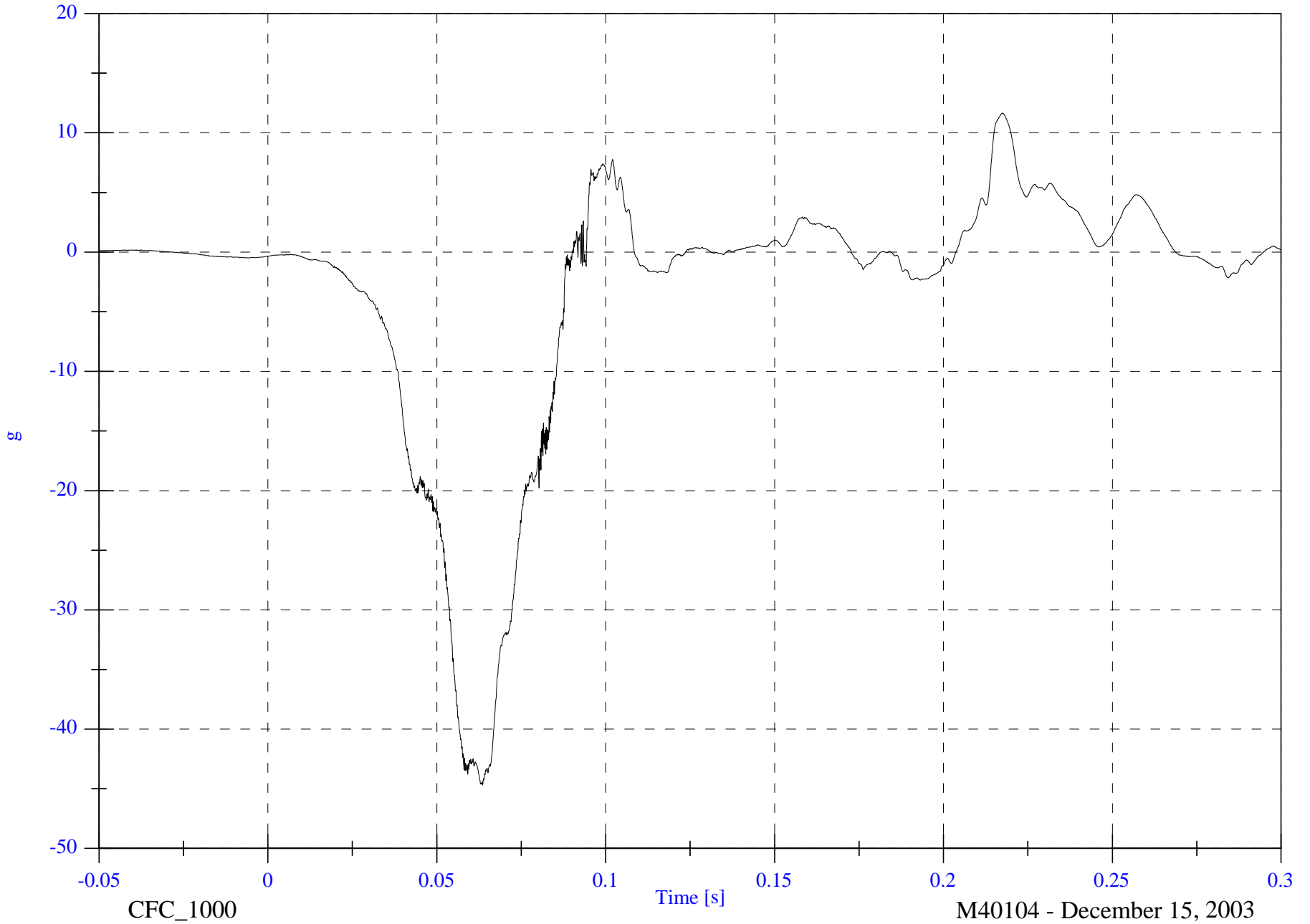
V1P4 Pelvic z

Max: 11.6 [g] at 0.218 [s]

Min: -44.7 [g] at 0.064 [s]

4-62

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

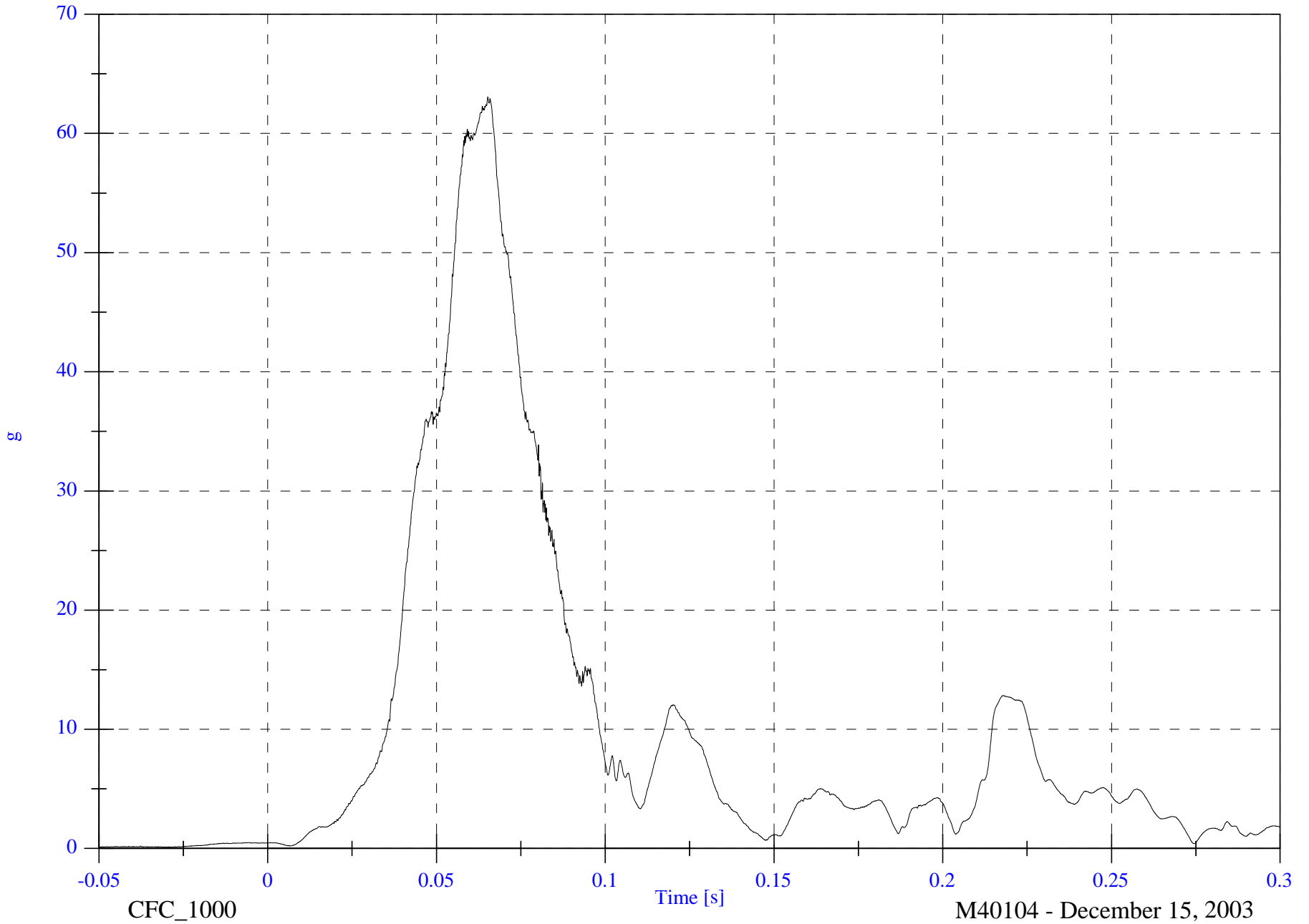
V1P4 Pelvic Resultant

Max: 63.0 [g] at 0.065 [s]

Min: 0.1 [g] at -0.029 [s]

4-63

8642-NCAP-37



CFC_1000

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

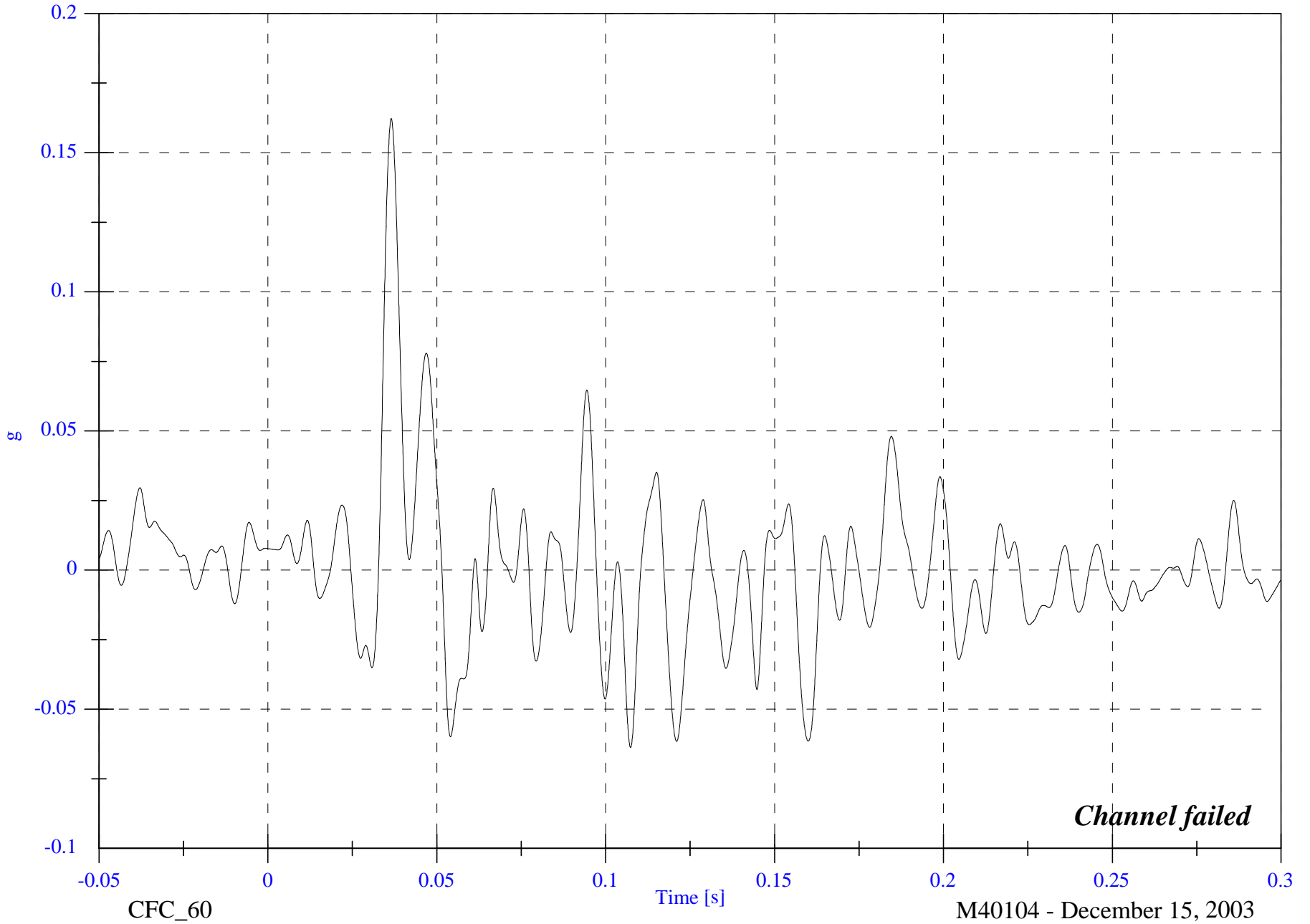
V1 P3 Seat x

Max: 0.2 [g] at 0.036 [s]

Min: -0.1 [g] at 0.107 [s]

4-64

8642-NCAP-37



CFC_60

Time [s]

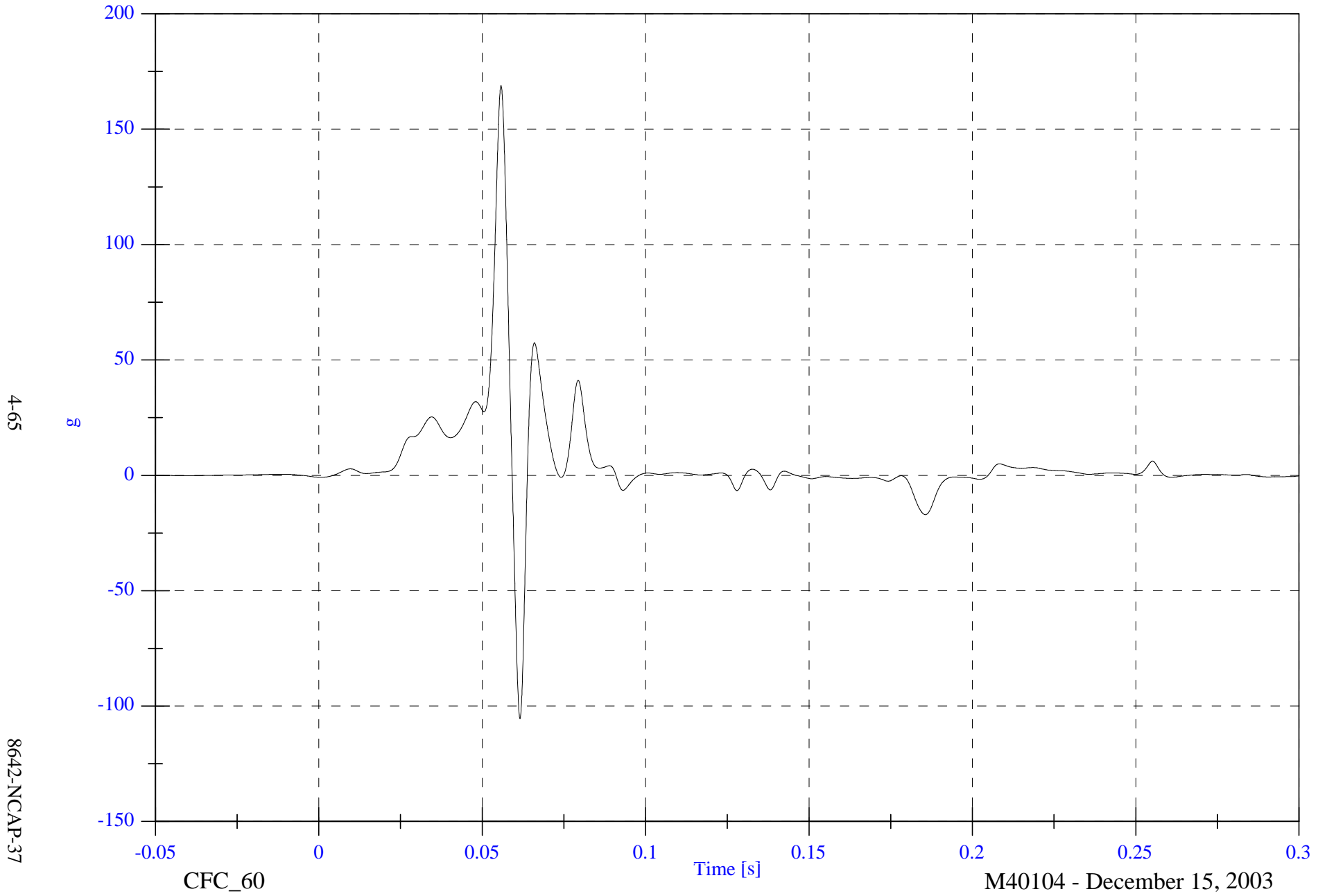
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P3 Seat y

Max: 168.9 [g] at 0.056 [s]

Min: -105.5 [g] at 0.062 [s]

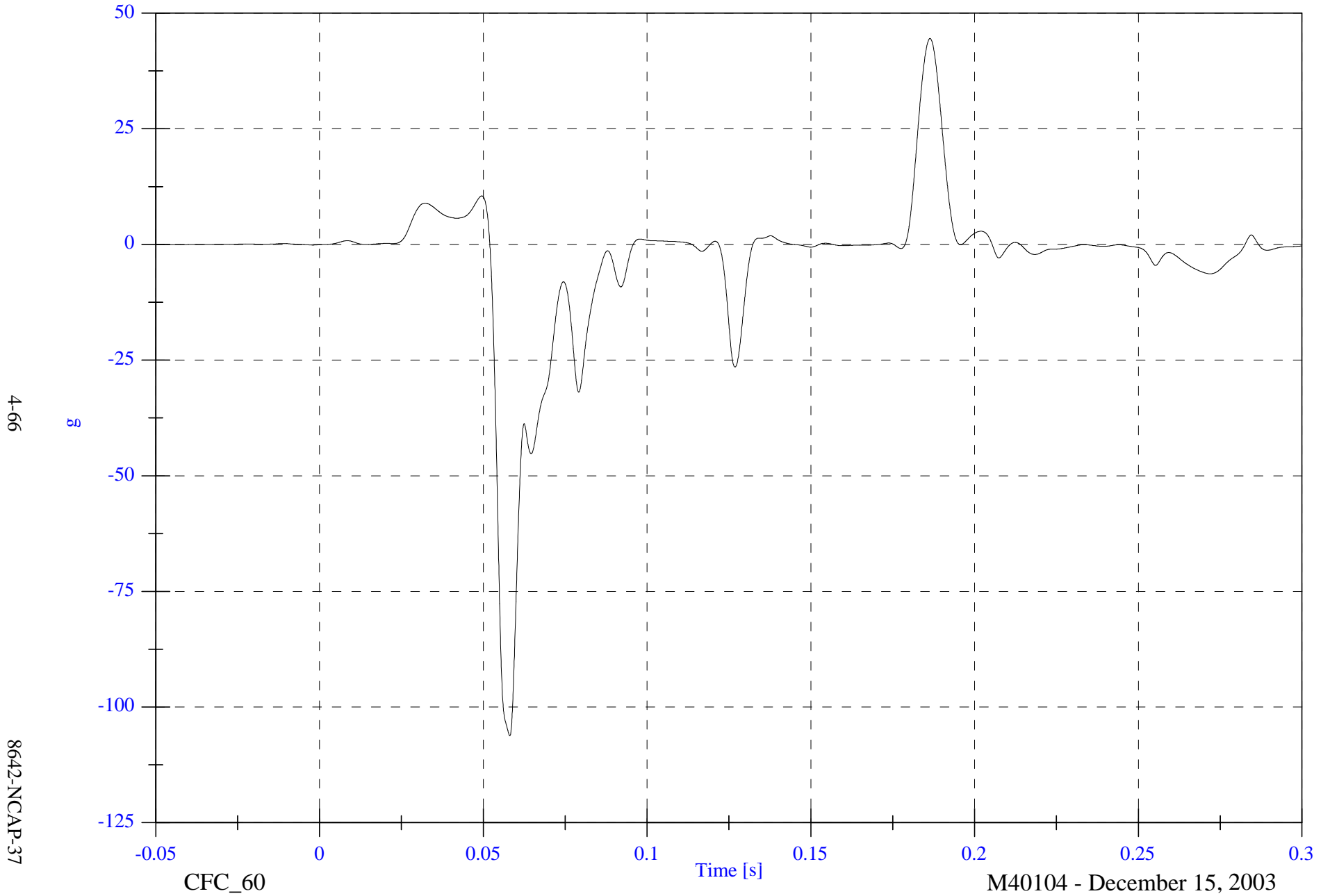


2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P3 Seat z

Max: 44.5 [g] at 0.186 [s]

Min: -106.2 [g] at 0.058 [s]



2004 NCAP Test 1 2004 Chevrolet Malibu

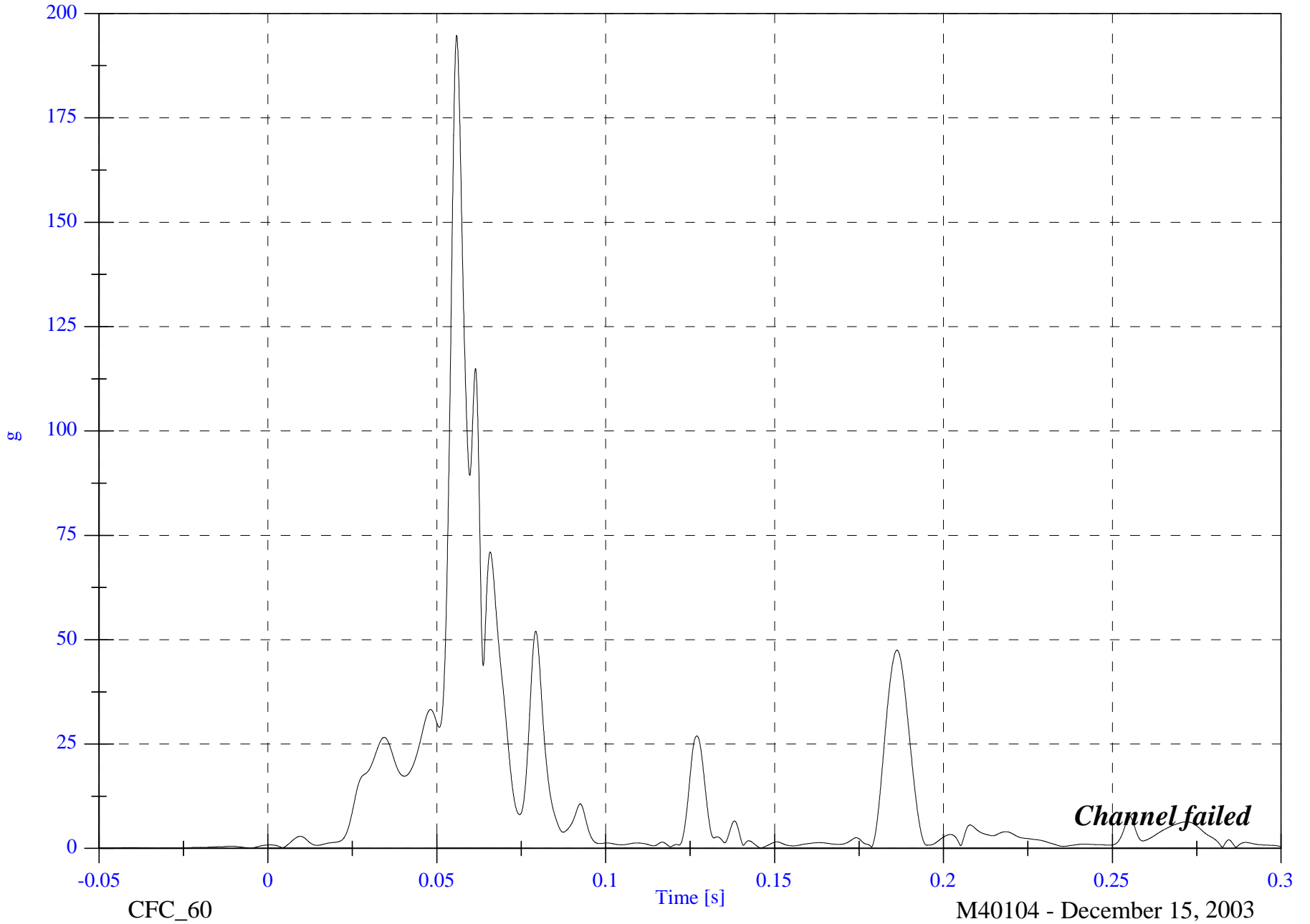
V1 P3 Seat Resultant

Max: 194.8 [g] at 0.056 [s]

Min: 0.0 [g] at -0.032 [s]

4-67

8642-NCAP-37



CFC_60

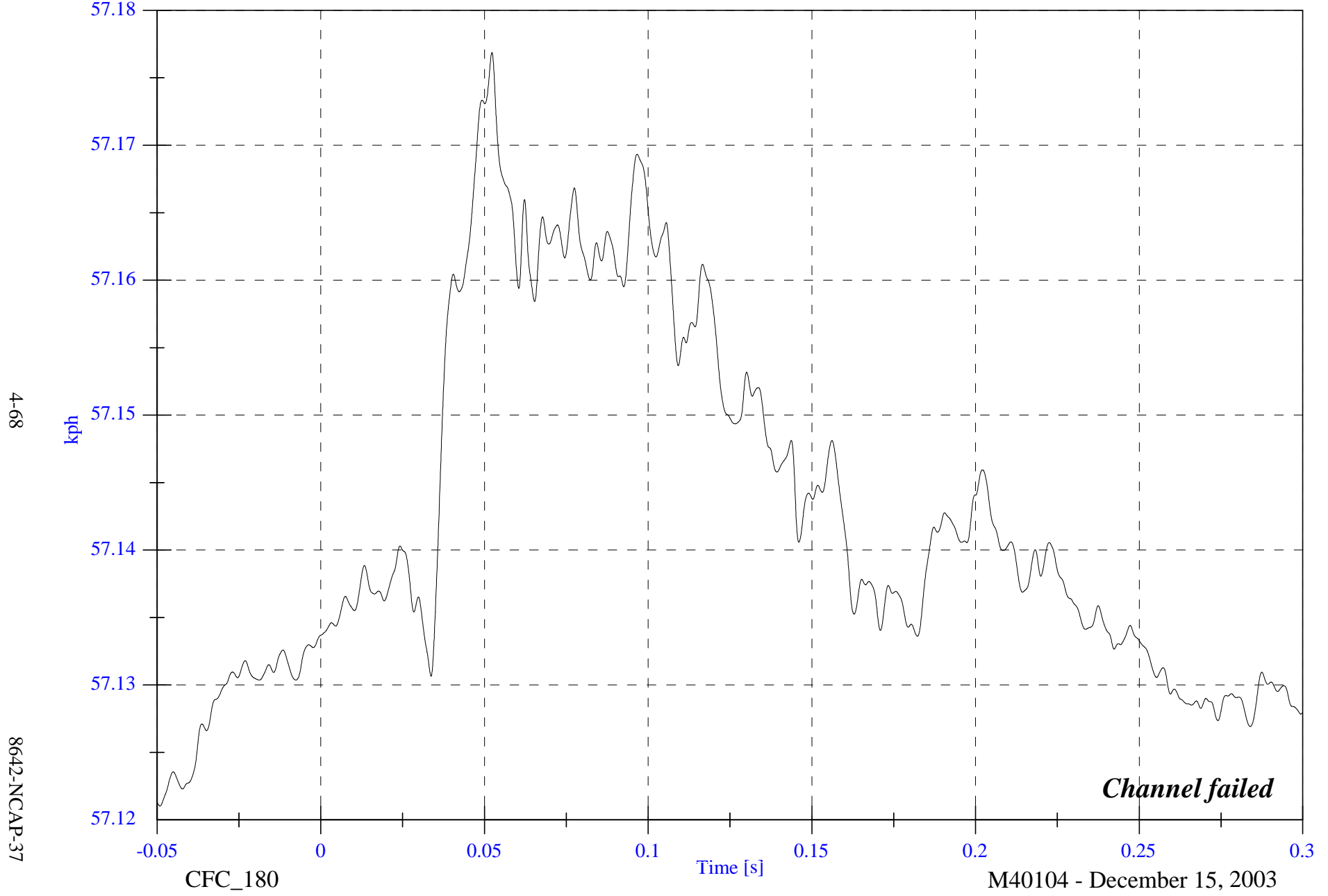
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 57.2 [kph] at 0.052 [s]

Min: 57.1 [kph] at -0.049 [s]

V1 P3 Seat x Velocity



4-68

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

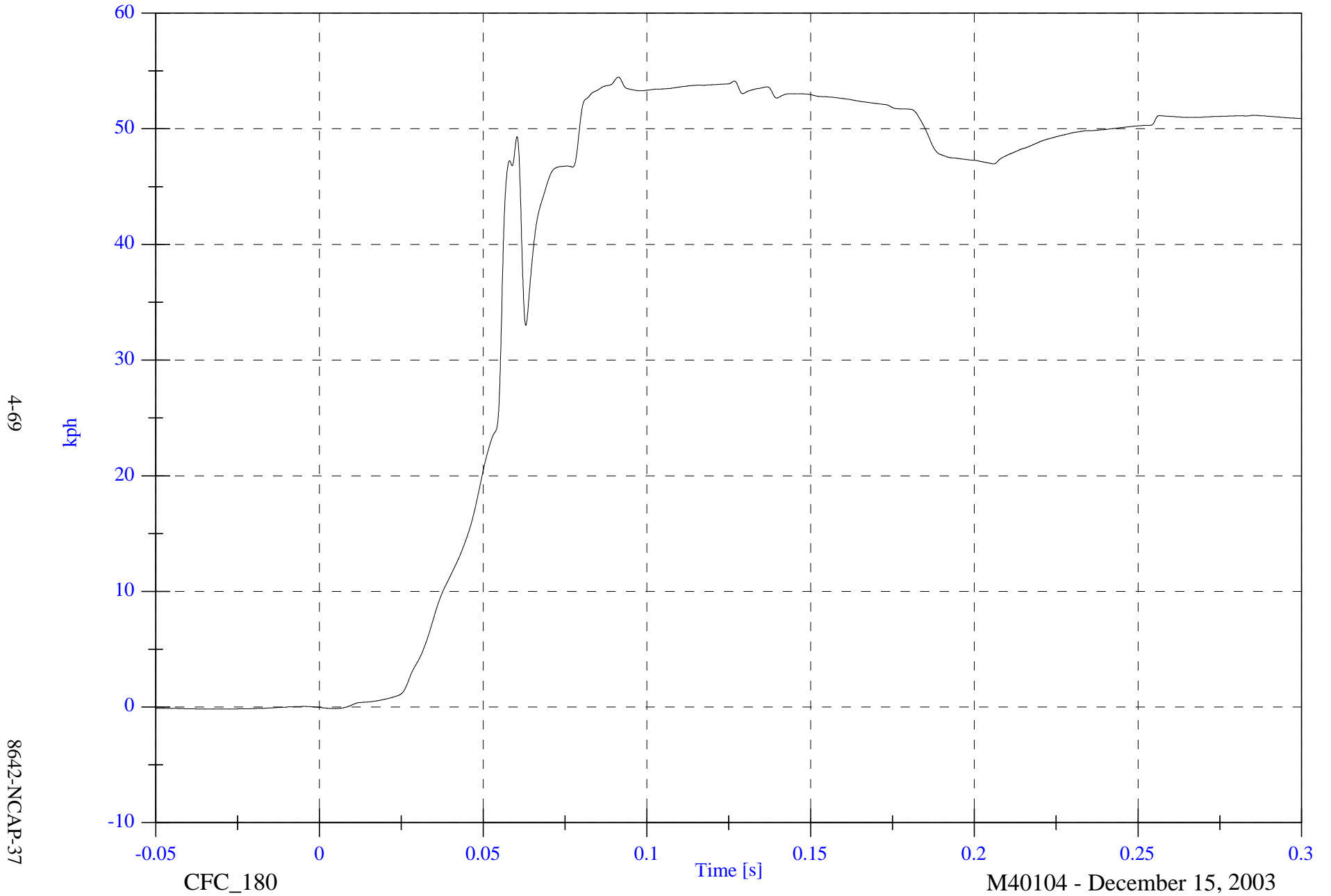
Channel failed

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 54.5 [kph] at 0.091 [s]

Min: -0.2 [kph] at -0.033 [s]

V1 P3 Seat y Velocity



4-69

8642-NCAP-37

CFC_180

Time [s]

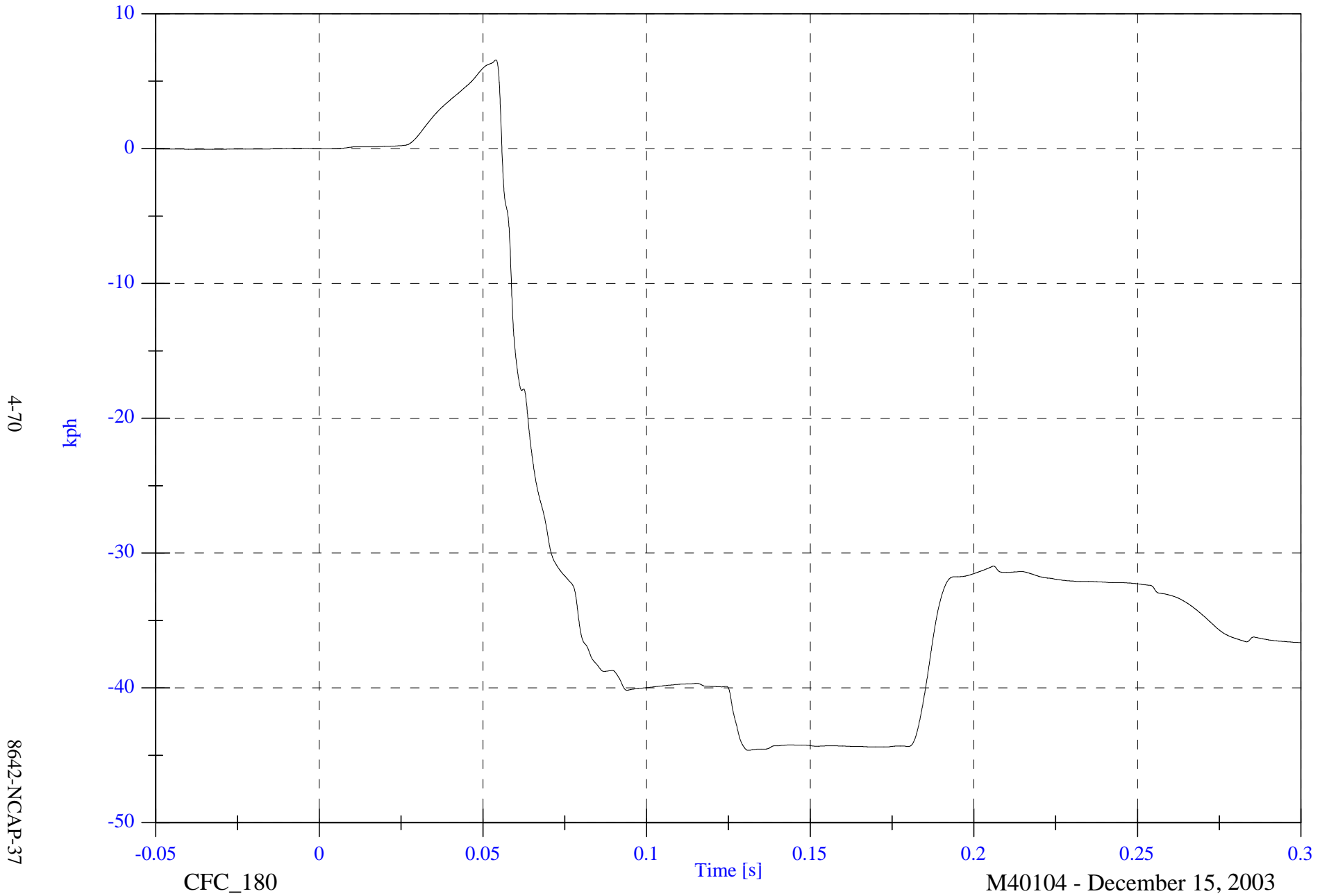
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

Max: 6.6 [kph] at 0.054 [s]

Min: -44.6 [kph] at 0.131 [s]

V1 P3 Seat z Velocity



4-70

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

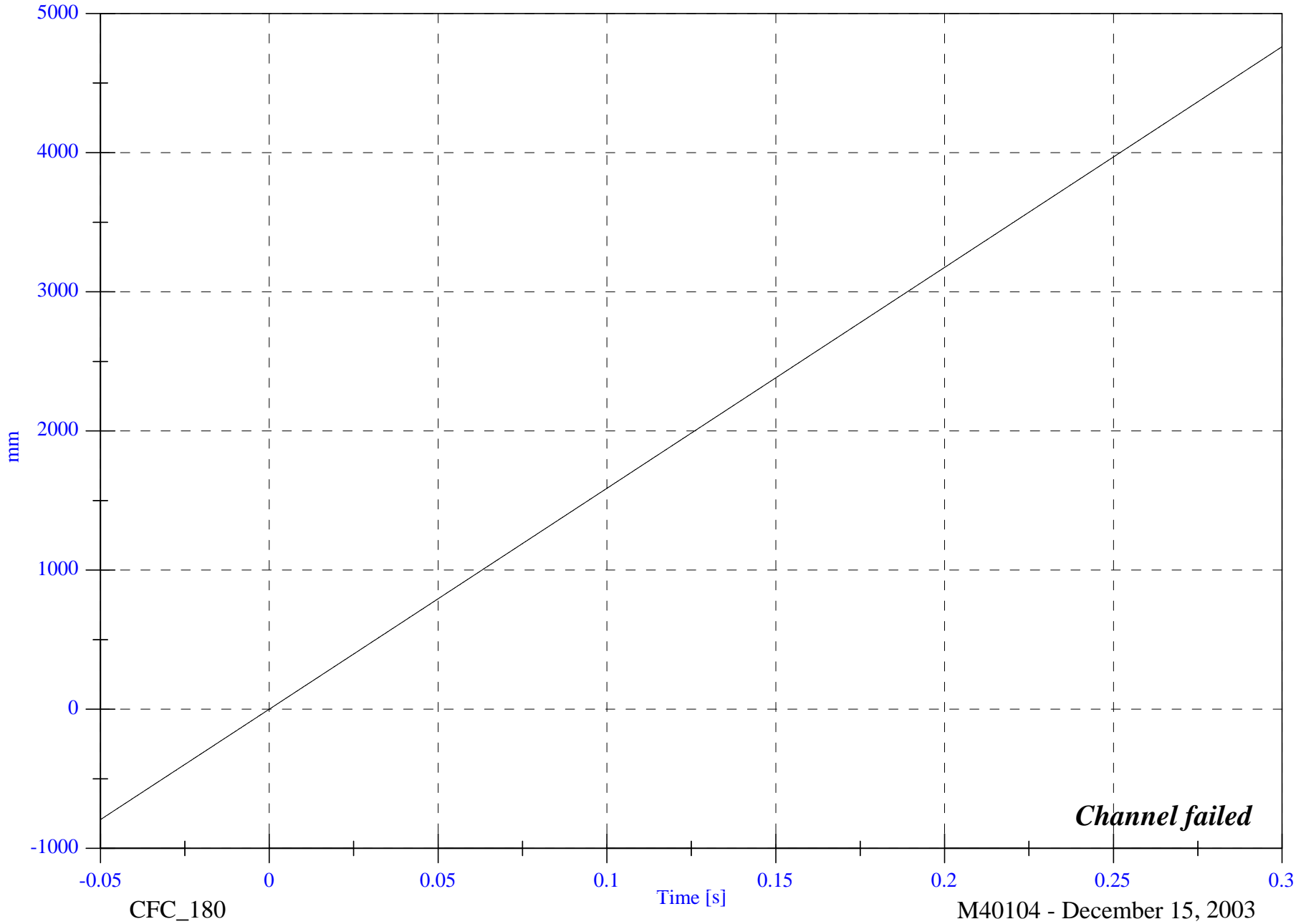
V1 P3 Seat x Displacement

Max: 4761.3 [mm] at 0.300 [s]

Min: -793.5 [mm] at -0.050 [s]

4-71

8642-NCAP-37



CFC_180

Time [s]

M40104 - December 15, 2003

Channel failed

2004 NCAP Test 1 2004 Chevrolet Malibu

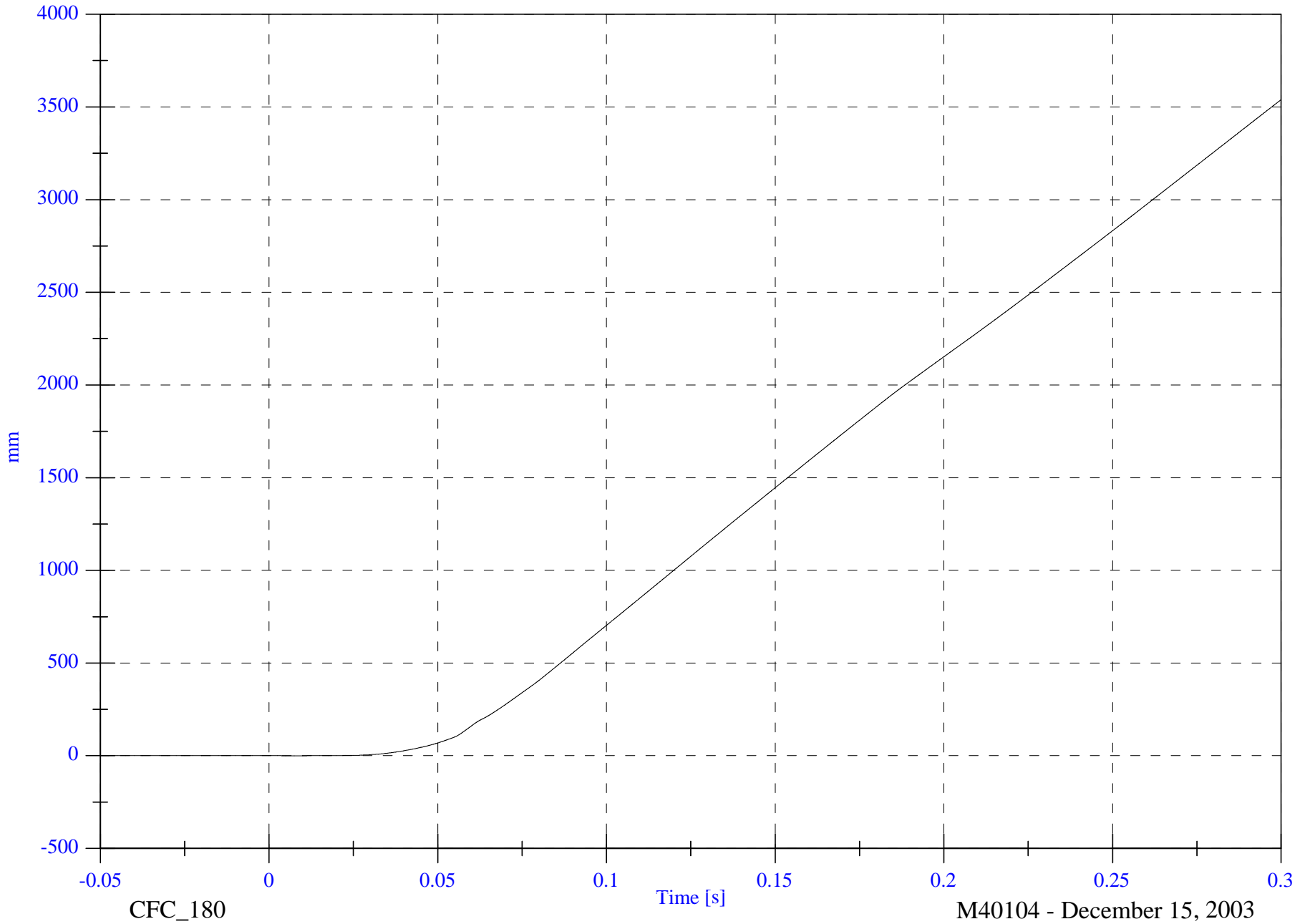
V1 P3 Seat y Displacement

Max: 3538.9 [mm] at 0.300 [s]

Min: -0.2 [mm] at 0.008 [s]

4-72

8642-NCAP-37



CFC_180

Time [s]

M40104 - December 15, 2003

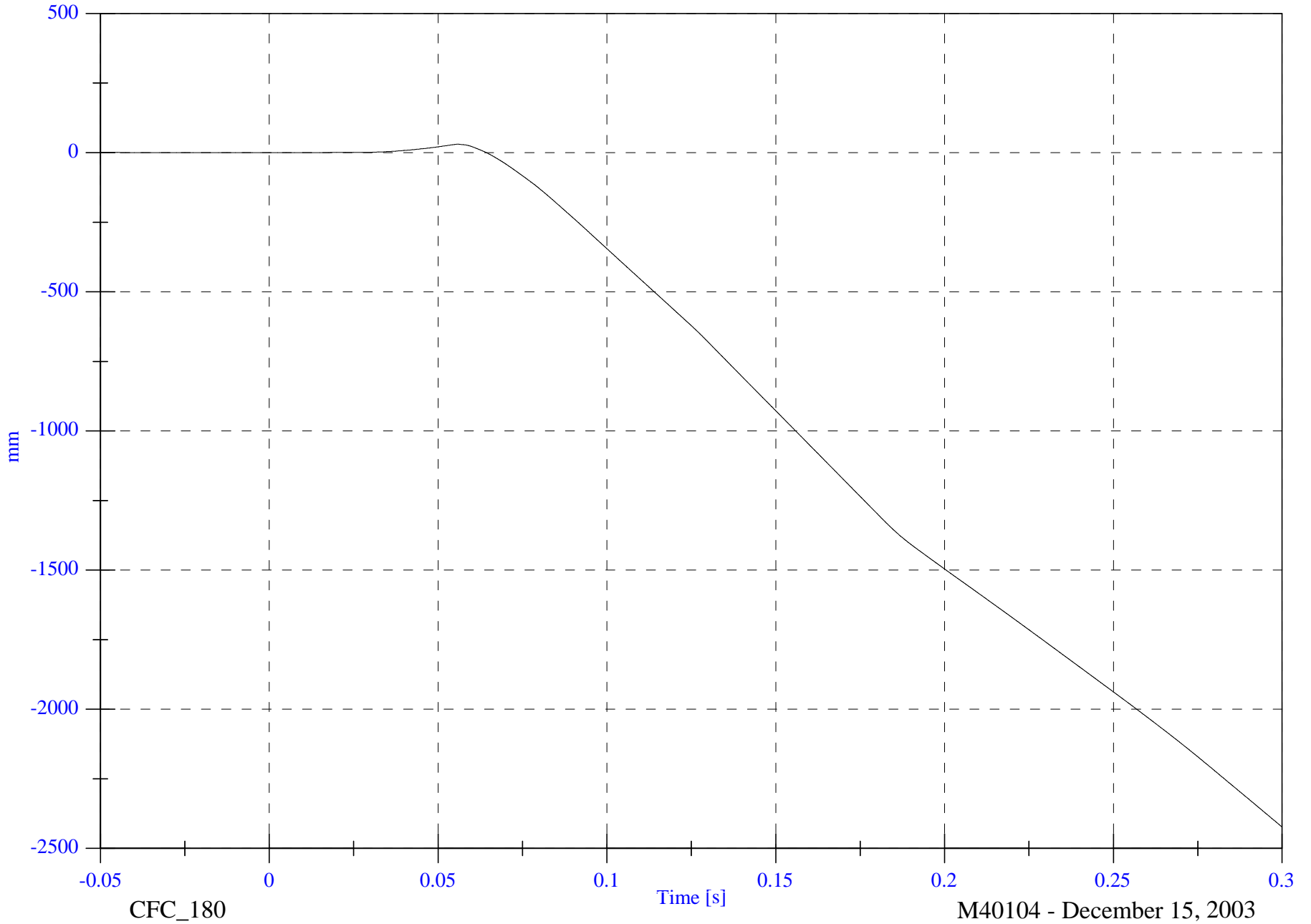
2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P3 Seat z Displacement

Max: 30.1 [mm] at 0.056 [s]
Min: -2423.0 [mm] at 0.300 [s]

4-73

8642-NCAP-37

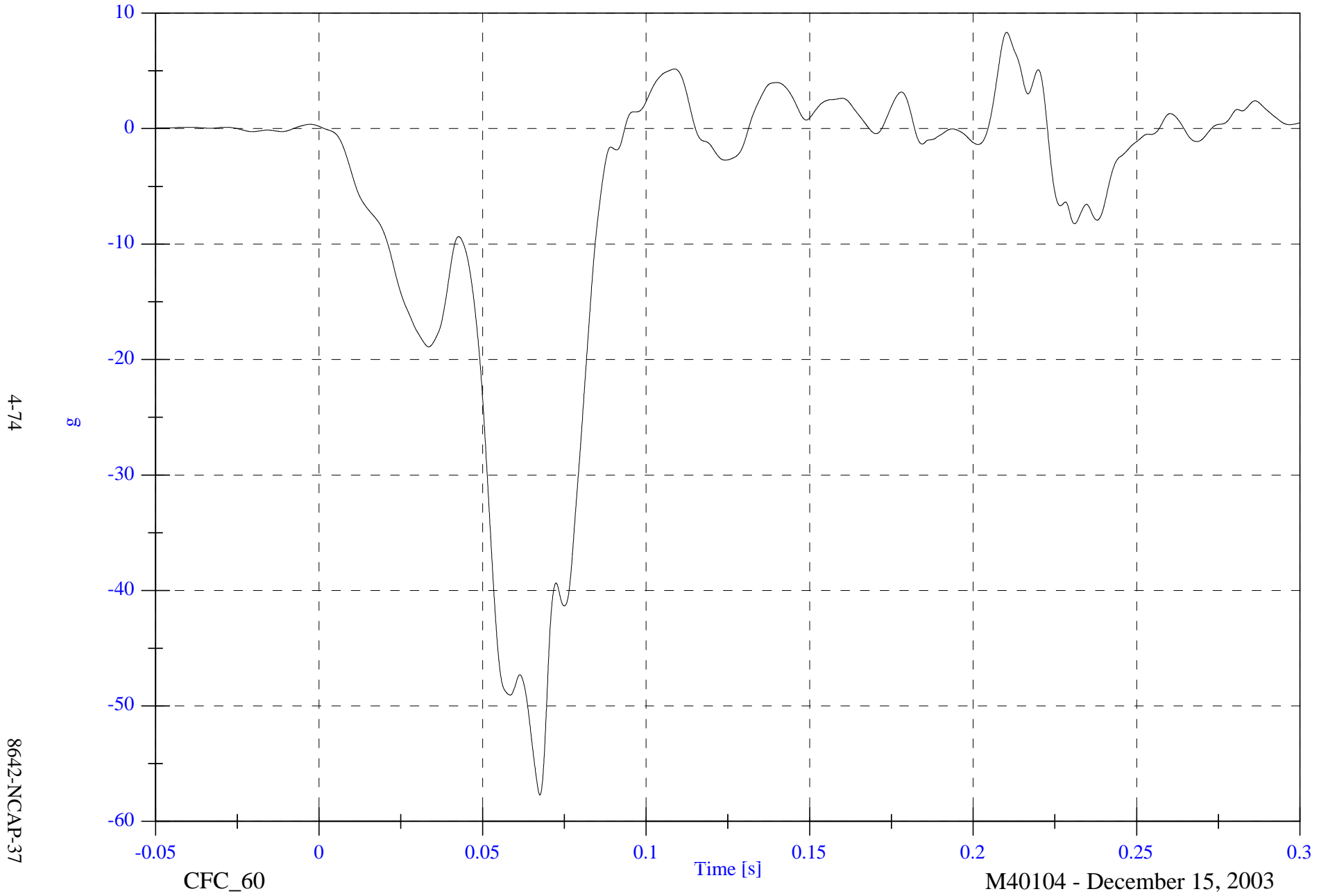


2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P4 Seat x

Max: 8.3 [g] at 0.210 [s]

Min: -57.7 [g] at 0.068 [s]



4-74

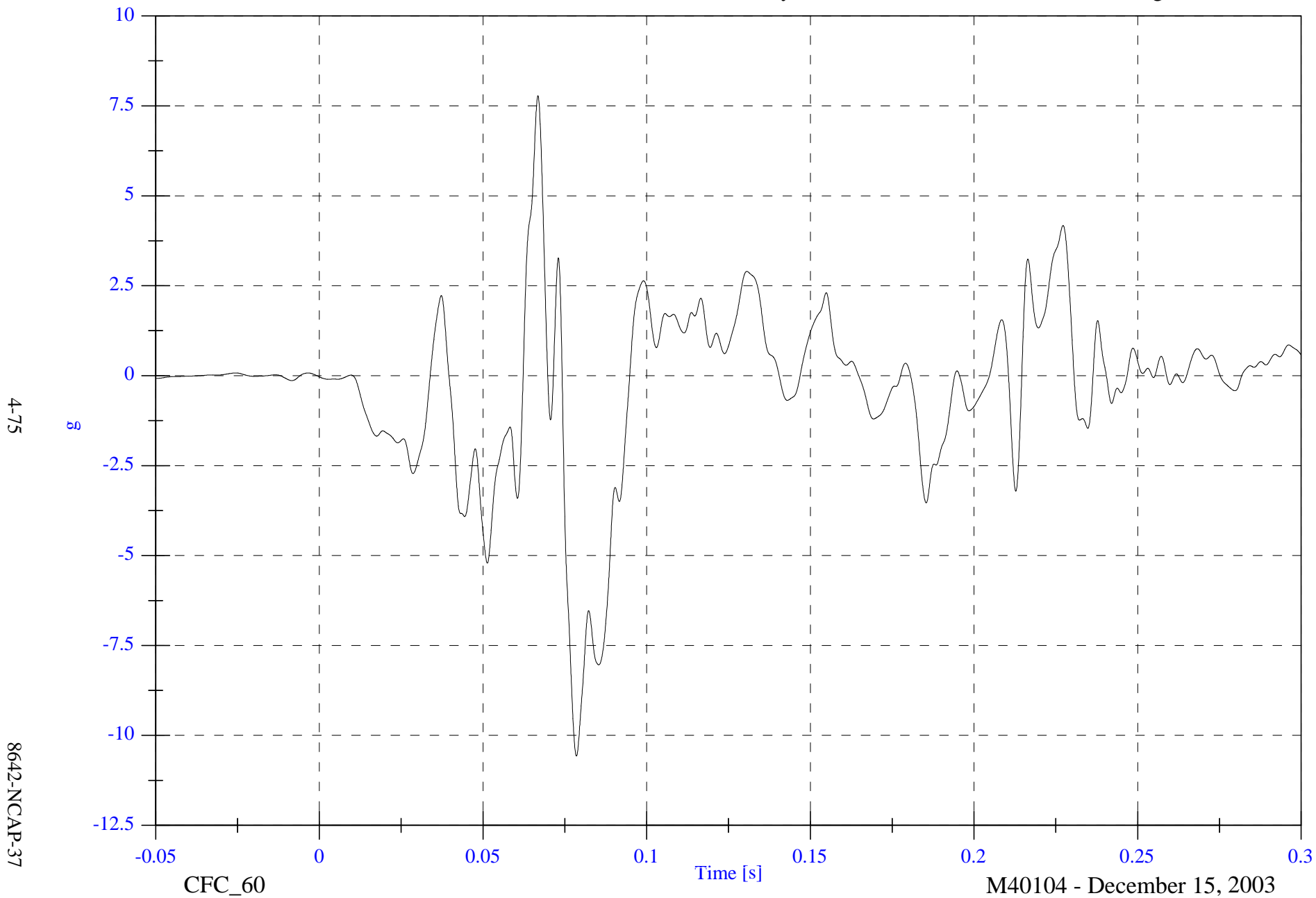
8642-NCAP-37

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P4 Seat y

Max: 7.8 [g] at 0.067 [s]

Min: -10.6 [g] at 0.079 [s]



4-75

8642-NCAP-37

CFC_60

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

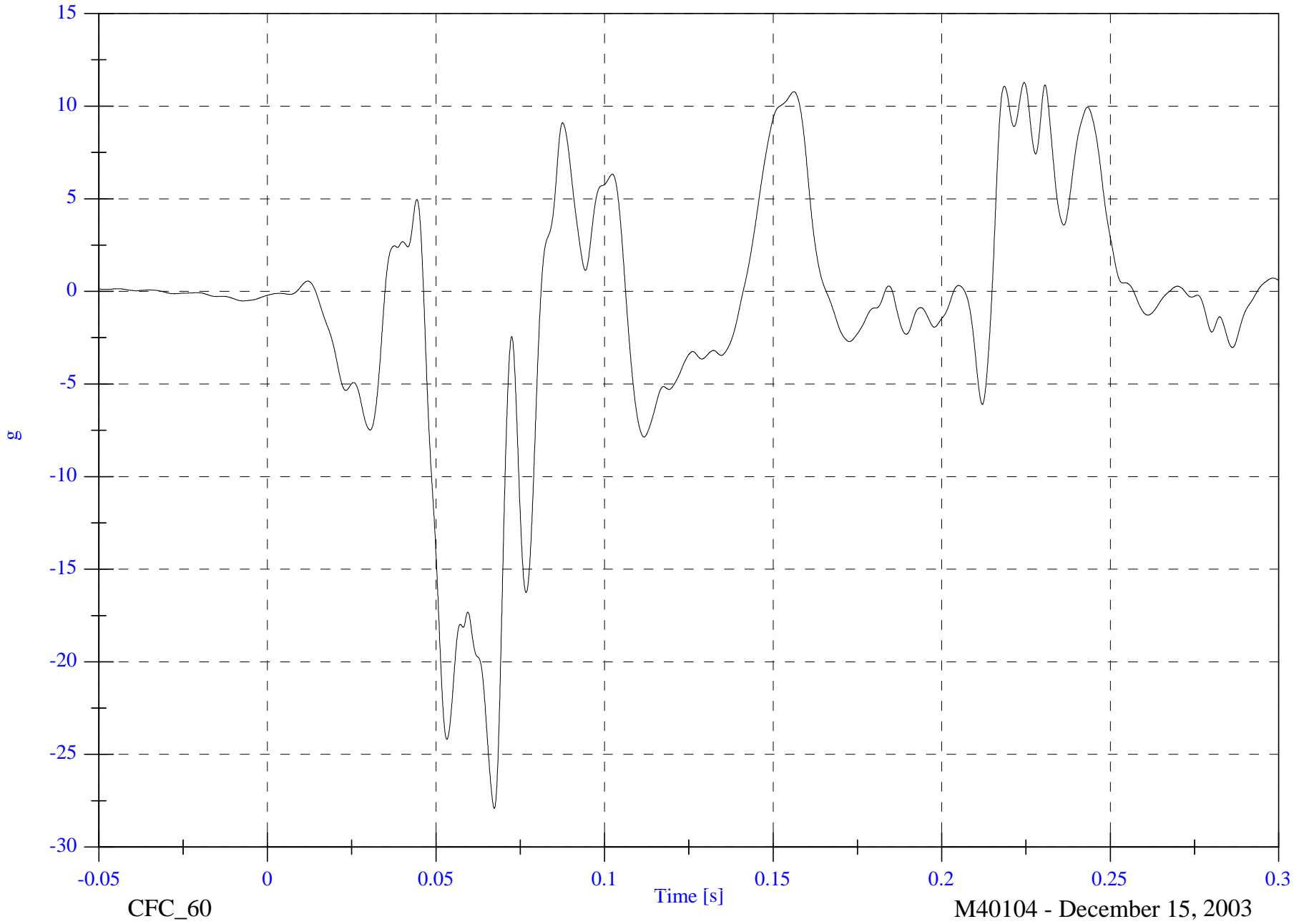
V1 P4 Seat z

Max: 11.3 [g] at 0.225 [s]

Min: -27.9 [g] at 0.067 [s]

4-76

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

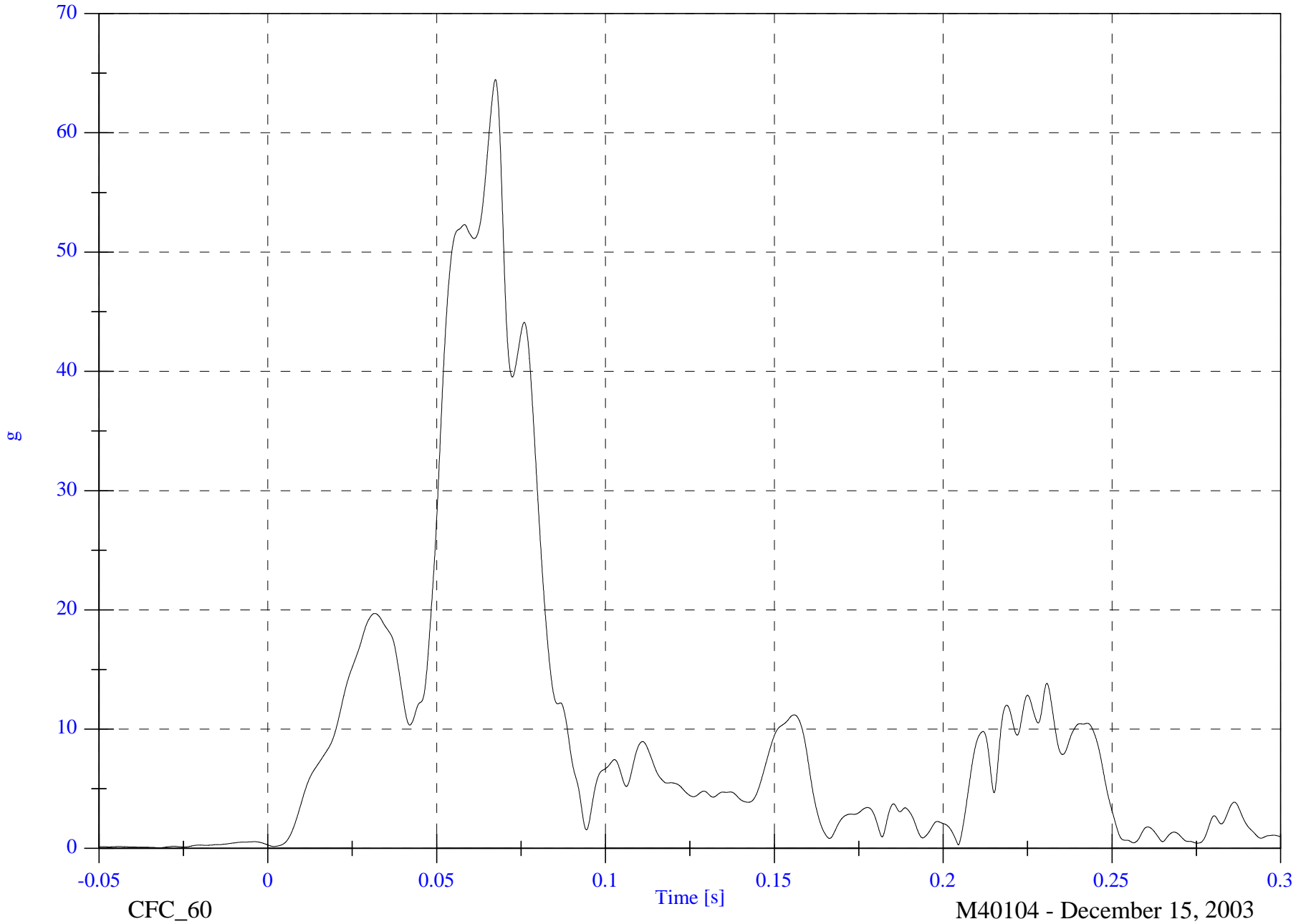
V1 P4 Seat Resultant

Max: 64.5 [g] at 0.067 [s]

Min: 0.1 [g] at -0.032 [s]

4-77

8642-NCAP-37



2004 NCAP Test 1 2004 Chevrolet Malibu

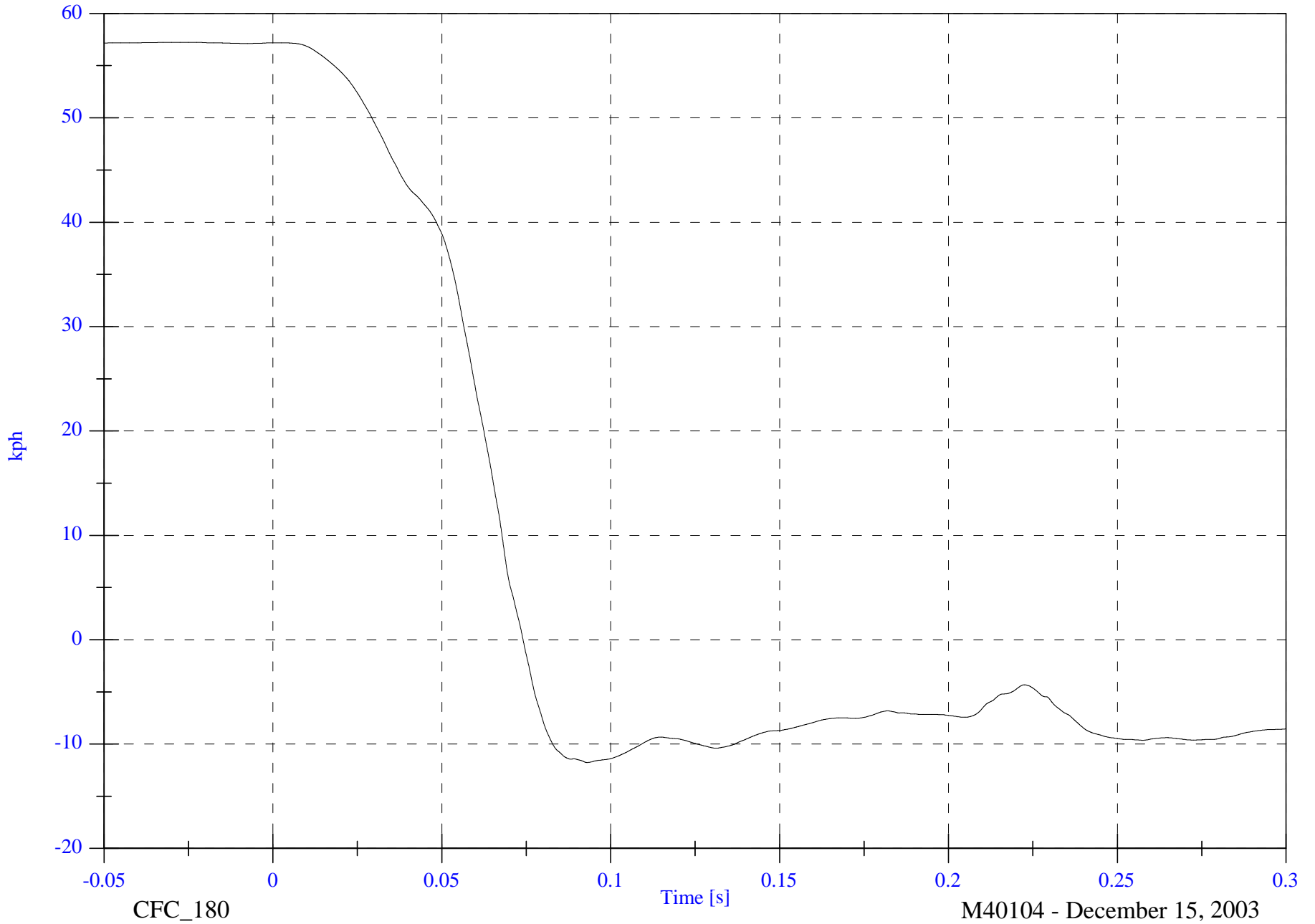
V1 P4 Seat x Velocity

Max: 57.2 [kph] at -0.025 [s]

Min: -11.8 [kph] at 0.093 [s]

4-78

8642-NCAP-37



CFC_180

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

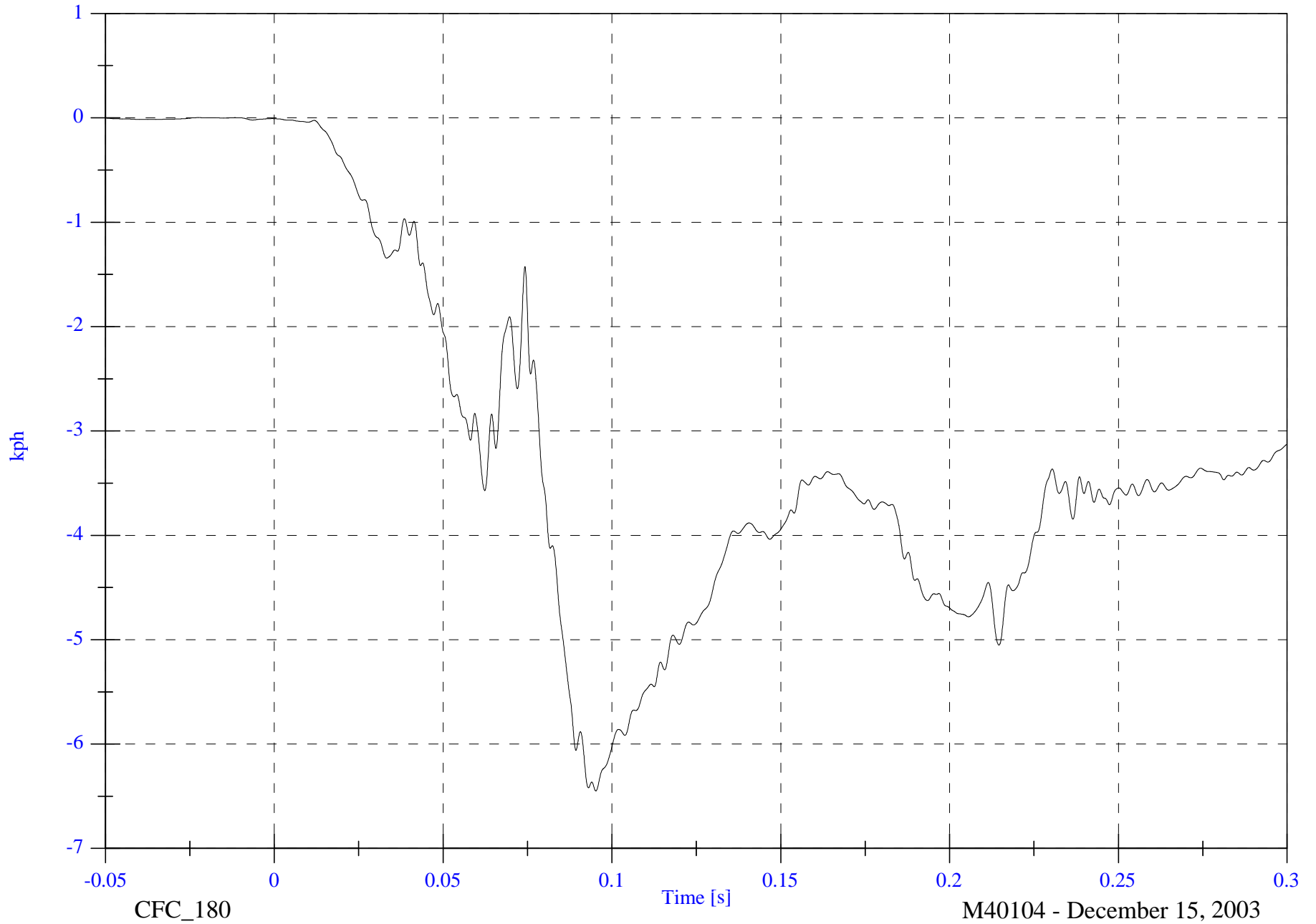
V1 P4 Seat y Velocity

Max: 0.0 [kph] at -0.022 [s]

Min: -6.4 [kph] at 0.095 [s]

4-79

8642-NCAP-37



CFC_180

Time [s]

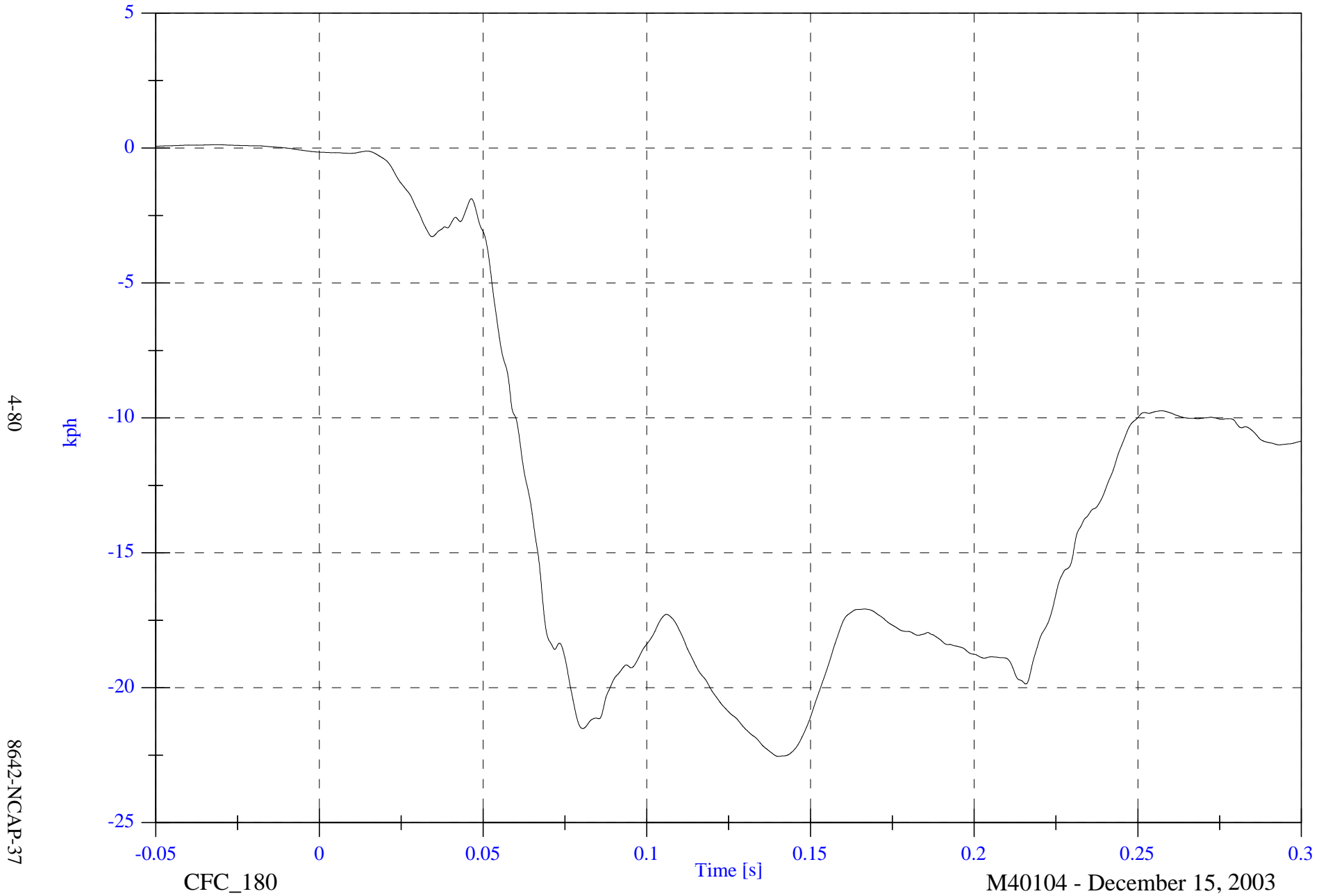
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P4 Seat z Velocity

Max: 0.1 [kph] at -0.031 [s]

Min: -22.5 [kph] at 0.140 [s]



4-80

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

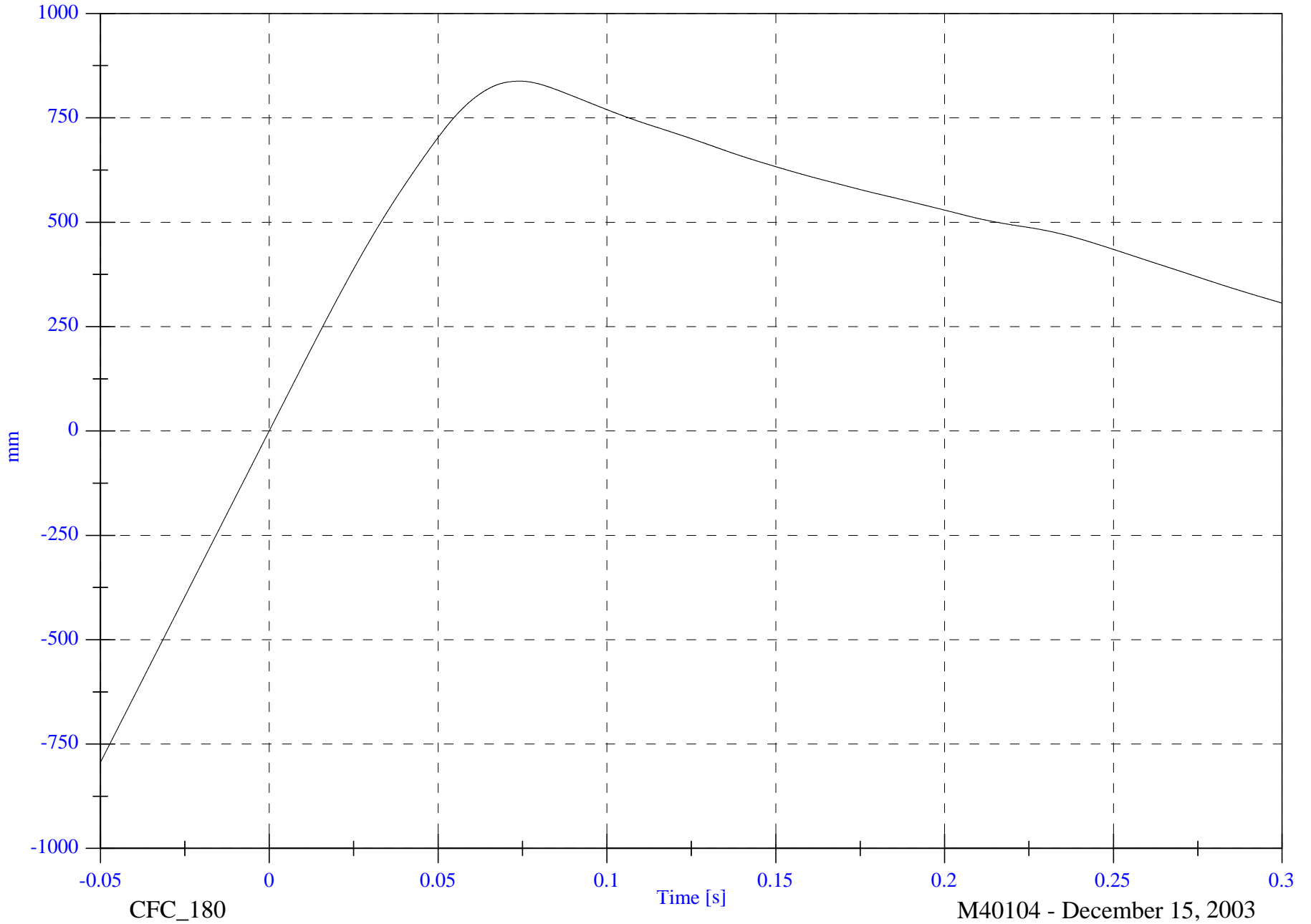
V1 P4 Seat x Displacement

Max: 838.0 [mm] at 0.074 [s]

Min: -794.3 [mm] at -0.050 [s]

4-81

8642-NCAP-37



CFC_180

Time [s]

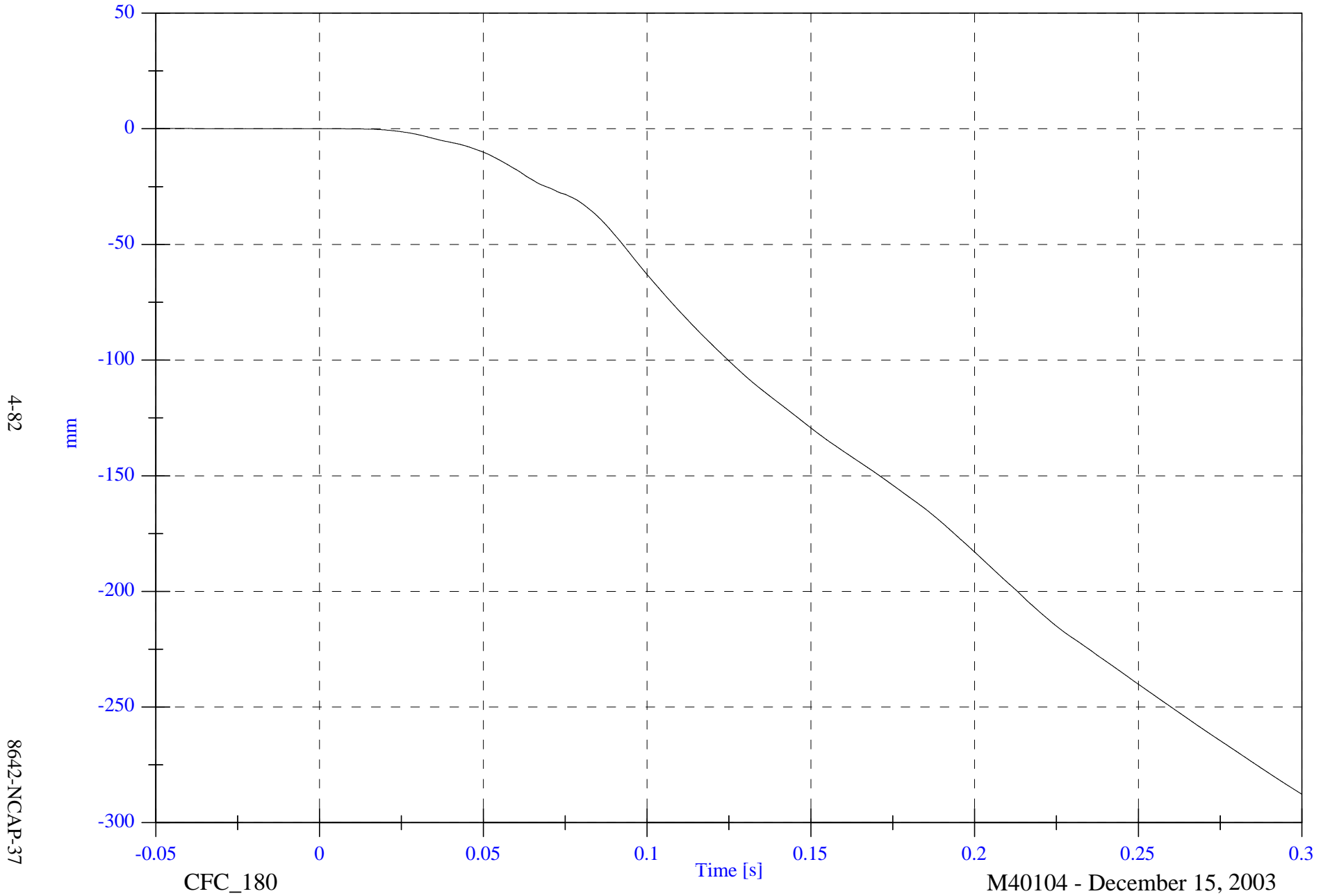
M40104 - December 15, 2003

2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P4 Seat y Displacement

Max: 0.1 [mm] at -0.050 [s]

Min: -287.7 [mm] at 0.300 [s]



4-82

8642-NCAP-37

CFC_180

Time [s]

M40104 - December 15, 2003

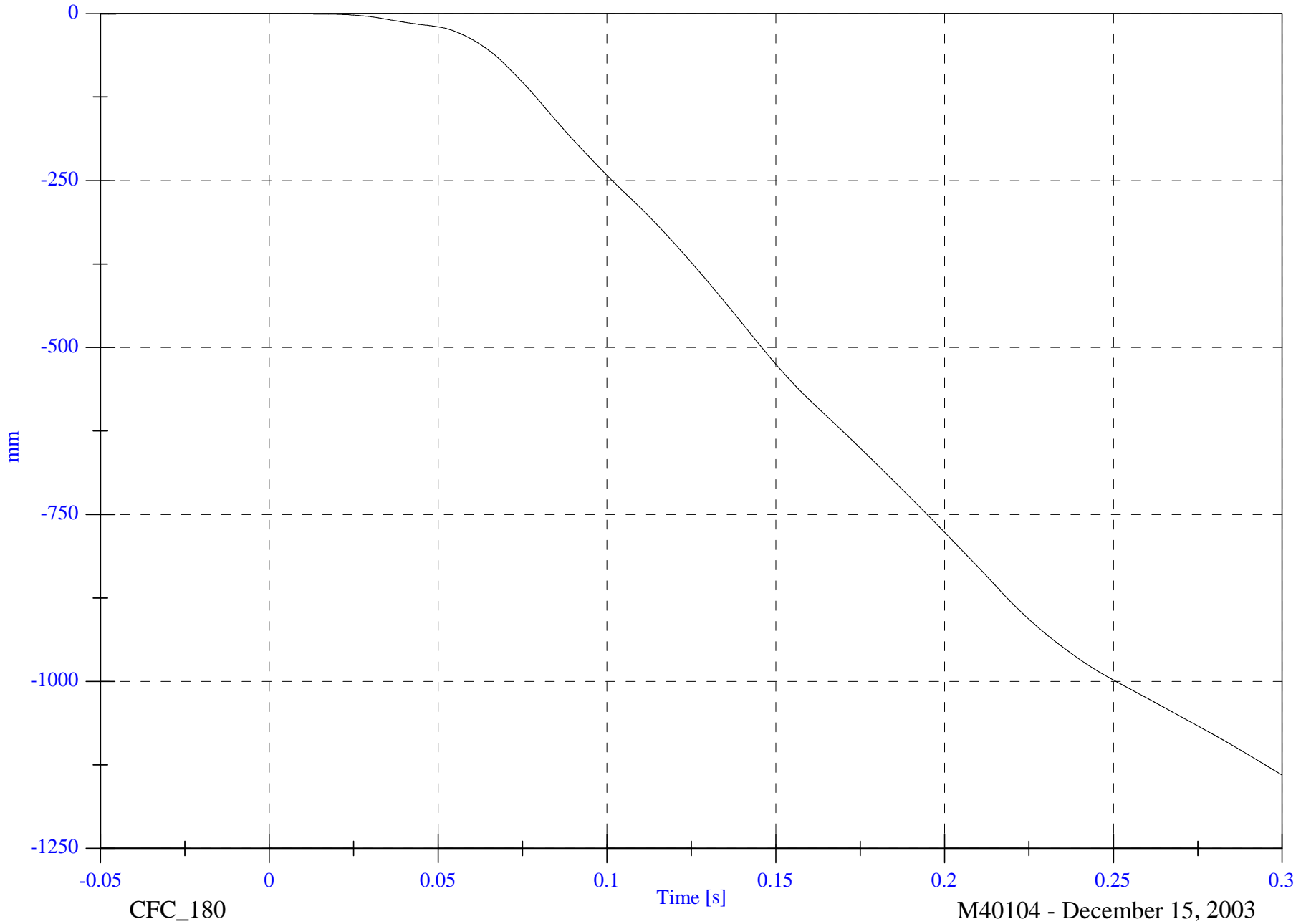
2004 NCAP Test 1 2004 Chevrolet Malibu

V1 P4 Seat z Displacement

Max: 0.2 [mm] at -0.010 [s]
Min: -1140.1 [mm] at 0.300 [s]

4-83

8642-NCAP-37



CFC_180

Time [s]

M40104 - December 15, 2003

SECTION 5

CHILD DUMMY CALIBRATION INFORMATION

PART 572P
HEAD DROP TEST

Dummy Serial Number 044
Sequential Test Number 1
Date 10-21-03
Workfile 044H 10-21-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	28.00
Peak Resultant Acceleration	250-280 G's	267.17
Peak Lateral Acceleration	15 G's Max	10.70
Is Acceleration Curve Unimodal?	<10%	5.39

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK FLEXION TEST

Dummy Serial Number 044
 Sequential Test Number 1
 Date 10-22-03
 Workfile 044NF 10-22-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	38.00
Pendulum Speed		5.40-5.60 m/s	5.46
Pendulum Pulse	10 ms	2.00 – 2.70 m/s	2.14
	15 ms	3.00 – 4.00 m/s	3.13
	20 ms	4.00 – 5.10 m/s	4.30
D Plane Rotation	Max	70.0 – 82.0 Deg	75.72
Maximum Occipital Moment		42.00 - 53.00 N-m	52.40
Occipital Moment Decay		60.0 - 80.0 ms	74.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK EXTENSION TEST

Dummy Serial Number 044
 Sequential Test Number 2
 Date 10-22-03
 Workfile 044NE2 10-22-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	38.00
Pendulum Speed		3.55 – 3.75 m/s	3.72
Pendulum Pulse	10 ms	1.00 – 1.40 m/s	1.05
	15 ms	1.90 – 2.50 m/s	1.98
	20 ms	2.80 – 3.50 m/s	2.82
D Plane Rotation	Max	83.0 – 93.0 Deg	85.02
Maximum Occipital Moment		-53.30 - -43.70 N-m	-45.28
Occipital Moment Decay		60.0 - 80.0 ms	67.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
THORAX IMPACT TEST

Dummy Serial Number 044
Sequential Test Number 1
Date 10-23-03
Workfile 044T 10-23-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	37.00
Pendulum Velocity	19.40 – 20.00 Ft/s	19.98
Maximum Deflection	1.30 – 1.50 in	1.41
Maximum Resistive Force	152.90 – 182.10 Lbs	176.02
Internal Hysteresis	65 - 85 %	72.12
Sternum Force Criteria	193.30 lbf	188.61

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572P
EXTERNAL DIMENSIONS

Dummy Serial Number 044
Sequential Test Number
Date

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Total Sitting Height	A	21.2 – 21.8 in	21.4
Shoulder Pivot Height	B	12.1 - 12.7 in	12.4
H-Point Height	C	1.35 – 1.75 in	1.57
H-Point from Backline	D	2.24 – 2.64 in	2.76
Shoulder Pivot from Backline	E	2.40 – 2.80 in	2.76
Thigh Clearance	F	3.19 – 3.59 in	3.27
Back of Elbow to Fingertip	G	9.74 – 10.34 in	10.04
Head back from Backline	H	1.9 – 2.3 in	2.17
Shoulder - Elbow Length	I	7.3 – 7.9 in	7.87
Elbow Rest Height	J	5.26 – 5.86 in	5.31
Buttock to Knee Length	K	11.21 – 11.81 in	11.41
Popliteal Height	L	8.60 – 9.20 in	8.86
Knee Pivot Height	M	9.51 – 10.11 in	9.84
Buttock Popliteal Length	N	8.58 - 9.18 in	8.86
Chest Depth with Jacket	O	5.45 - 6.05 in	5.98
Foot Length	P	5.42 – 5.82 in	5.47
Stature	Q	36.7 – 37.7 in	37.01
Buttock to Knee Pivot Length	R	9.9 - 10.3 in	10.04
Head Breadth	S	5.15 – 5.55 in	5.16
Head Depth	T	6.59 -7.19 in	6.81
Hip Breadth	U	7.9 – 8.5 in	8.15
Shoulder Breadth	V	9.31 – 9.91in	9.49
Foot Breadth	W	2.11 – 2.51 in	2.32
Head Circumference	X	19.7 – 20.3 in	20.0
Chest Circumference (With Jacket)	Y	20.75 – 21.75 in	21.65
Waist Circumference	Z	20.75 – 21.75 in	21.66
Location for Chest Circumference	AA	9.8 – 10.2 in	10.04
Location for Waist Circumference	BB	6.3 – 6.7 in	6.50

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
HEAD DROP TEST

Dummy Serial Number 142
Sequential Test Number 1
Date 12-10-03
Workfile 142H 12-10-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	38.0
Peak Resultant Acceleration	250-280 G's	272.76
Peak Lateral Acceleration	15 G's Max	6.00
Is Acceleration Curve Unimodal?	<10%	4.31

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK FLEXION TEST

Dummy Serial Number 142
 Sequential Test Number 1
 Date 12-11-03
 Workfile 142nf 12-11-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	27.0
Pendulum Speed		5.40-5.60 m/s	5.55
Pendulum Pulse	10 ms	2.00 – 2.70 m/s	2.05
	15 ms	3.00 – 4.00 m/s	3.03
	20 ms	4.00 – 5.10 m/s	4.13
D Plane Rotation	Max	70.0 – 82.0 Deg	80.64
Maximum Occipital Moment		42.00 - 53.00 N-m	42.46
Occipital Moment Decay		60.0 - 80.0 ms	69.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK EXTENSION TEST

Dummy Serial Number 142
 Sequential Test Number 2
 Date 12-11-03
 Workfile 142ne2 12-11-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	27.00
Pendulum Speed		3.55 – 3.75 m/s	3.60
Pendulum Pulse	10 ms	1.00 – 1.40 m/s	1.10
	15 ms	1.90 – 2.50 m/s	2.02
	20 ms	2.80 – 3.50 m/s	2.85
D Plane Rotation	Max	83.0 – 93.0 Deg	83.64
Maximum Occipital Moment		-53.30 - -43.70 N-m	-52.76
Occipital Moment Decay		60.0 - 80.0 ms	72.40

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
THORAX IMPACT TEST

Dummy Serial Number 142
 Sequential Test Number 1
 Date 12-12-03
 Workfile 142T 12-12-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	35.0
Pendulum Velocity	19.40 – 20.00 Ft/s	19.70
Maximum Deflection	1.30 – 1.50 in	1.30
Maximum Resistive Force	152.90 – 182.10 Lbs	167.53
Internal Hysteresis	65 - 85 %	76.46
Sternum Force Criteria	193.30 lbf	179.91

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572P
EXTERNAL DIMENSIONS

Dummy Serial Number 142
Sequential Test Number 1
Date 12-11-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Total Sitting Height	A	21.2 – 21.8 in	21.2
Shoulder Pivot Height	B	12.1 - 12.7 in	12.4
H-Point Height	C	1.35 – 1.75 in	1.55
H-Point from Backline	D	2.24 – 2.64 in	2.5
Shoulder Pivot from Backline	E	2.40 – 2.80 in	2.6
Thigh Clearance	F	3.19 – 3.59 in	3.5
Back of Elbow to Fingertip	G	9.74 – 10.34 in	10.1
Head back from Backline	H	1.9 – 2.3 in	2.1
Shoulder - Elbow Length	I	7.3 – 7.9 in	7.7
Elbow Rest Height	J	5.26 – 5.86 in	5.5
Buttock to Knee Length	K	11.21 – 11.81 in	11.5
Popliteal Height	L	8.60 – 9.20 in	8.9
Knee Pivot Height	M	9.51 – 10.11 in	9.75
Buttock Popliteal Length	N	8.58 - 9.18 in	9.0
Chest Depth with Jacket	O	5.45 - 6.05 in	5.8
Foot Length	P	5.42 – 5.82 in	5.8
Stature	Q	36.7 – 37.7 in	37.0
Buttock to Knee Pivot Length	R	9.9 - 10.3 in	10.25
Head Breadth	S	5.15 – 5.55 in	5.4
Head Depth	T	6.59 -7.19 in	6.9
Hip Breadth	U	7.9 – 8.5 in	8.1
Shoulder Breadth	V	9.31 – 9.91in	9.9
Foot Breadth	W	2.11 – 2.51 in	2.3
Head Circumference	X	19.7 – 20.3 in	20.3
Chest Circumference (With Jacket)	Y	20.75 – 21.75 in	21.4
Waist Circumference	Z	20.75 – 21.75 in	21.4
Location for Chest Circumference	AA	9.8 – 10.2 in	10.00
Location for Waist Circumference	BB	6.3 – 6.7 in	6.50

Remarks:

Laboratory Technician:

B. Swiecicki

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 044		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P17912	ENDEVCO	21-Oct-03
HEAD AY	AC-P17743	ENDEVCO	21-Oct-03
HEAD AZ	AC-P15319	ENDEVCO	21-Oct-03
HEAD REAR AZ	AC-02I02I10-N06	ENTRAN	8-Dec-03
UPPER NECK FX	LC-248-FX	DENTON	1-Oct-03
UPPER NECK FY	LC-248-FY	DENTON	1-Oct-03
UPPER NECK FZ	LC-248-Fz	DENTON	1-Oct-03
UPPER NECK MX	LC-248-Mx	DENTON	1-Oct-03
UPPER NECK MY	LC-248-My	DENTON	1-Oct-03
UPPER NECK MZ	LC-248-Mz	DENTON	1-Oct-03
LOWER NECK FX	LC-249Fx	DENTON	1-Oct-03
LOWER NECK FY	LC-249Fy	DENTON	1-Oct-03
LOWER NECK FZ	LC-249Fz	DENTON	1-Oct-03
LOWER NECK MX	LC-249Mx	DENTON	1-Oct-03
LOWER NECK MY	LC-249My	DENTON	1-Oct-03
LOWER NECK MZ	LC-249Mz	DENTON	1-Oct-03
CHEST AX	AC-P15334	ENDEVCO	21-Oct-03
CHEST AY	AC-P15321	ENDEVCO	21-Oct-03
CHEST AZ	AC-P17758	ENDEVCO	21-Oct-03
CHEST DISPLACEMENT X	DS-044	SERVO	22-Jul-03
PELVIS AX	AC-P16755	ENDEVCO	21-Oct-03
PELVIS AY	AC-P15591	ENDEVCO	21-Oct-03
PELVIS AZ	AC-P16155	ENDEVCO	21-Oct-03

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #4 (LEFT) SERIAL NO.: 142		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P23804	ENTRAN	18-Sep-03
HEAD AY	AC-99102-F12	ENTRAN	18-Aug-03
HEAD AZ	AC-00L13-F03	ENTRAN	18-Aug-03
HEAD REAR AZ	AC-99108-F29	ENDEVCO	18-Aug-03
UPPER NECK FX	LC-213Fx	DENTON	1-Oct-03
UPPER NECK FY	LC-213Fy	DENTON	1-Oct-03
UPPER NECK FZ	LC-213Fz	DENTON	1-Oct-03
UPPER NECK MX	LC-213Mx	DENTON	1-Oct-03
UPPER NECK MY	LC-213My	DENTON	1-Oct-03
UPPER NECK MZ	LC-213Mz	DENTON	1-Oct-03
LOWER NECK FX	LC-214Fx	DENTON	1-Oct-03
LOWER NECK FY	LC-214Fy	DENTON	1-Oct-03
LOWER NECK FZ	LC-214Fz	DENTON	1-Oct-03
LOWER NECK MX	LC-214Mx	DENTON	1-Oct-03
LOWER NECK MY	LC-214My	DENTON	1-Oct-03
LOWER NECK MZ	LC-214Mz	DENTON	1-Oct-03
CHEST AX	AC-99108-F30	ENTRAN	18-Aug-03
CHEST AY	AC-99108-F28	ENTRAN	18-Aug-03
CHEST AZ	AC-99H30-Z04	ENTRAN	18-Aug-03
CHEST DISPLACEMENT X	DS-142	SERVO	18-Aug-03
PELVIS AX	AC-99102-F06	ENTRAN	18-Aug-03
PELVIS AY	AC-99102-F15	ENTRAN	18-Aug-03
PELVIS AZ	AC-99G29-Q13	ENTRAN	18-Aug-03

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS ACCELEROMETERS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-P16975	ENDEVCO	10-Sep-03
P3 CRS AY	AC-P18578	ENDEVCO	10-Sep-03
P3 CRS AZ	AC-P19227	ENDEVCO	10-Sep-03
P4 CRS AX	AC-P23926	ENDEVCO	10-Sep-03
P4 CRS AY	AC-P23854	ENDEVCO	10-Sep-03
P4 CRS AZ	AC-P23864	ENDEVCO	10-Sep-03